The Builder.

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The Recent County Council Election.

THE recent election for the London County Council has been, of course, the subject of discussion in the daily Press. It is too important, however, for it to be passed over without some notice in these columns. The result, as every one knows, has been to secure more seats for the Progressive party, and this, to a large extent, is owing to the conduct of the present Unionist Government. They made the serious mistake of confounding Imperial and Municipal politics, and the members of the Cabinet went about London making speeches as if upon the result of the election depended the fate of the Cabinet. It is one thing for a citizen of London to be in favour of the continued union of England and Ireland, and of expansion of the Empire, and quite another to desire to retain the water supply in the hands of private companies and the lighting in the power of the Vestries. Again, the politicians who were imported into the contest by the Moderates made another serious mistake — they called the Progressives "Socialists." The Progressive party have made serious mistakes; but the workingmen of London, the artisan and the shopman, look to the Progressive party to make their life more easy in many ways, as by municipal tramways as a means of locomotion, and by doing much in respect of parks and gardens. Even in regard to such a question as betterment, the small elector has an idea that he is being taken care of, and, moreover, the very name "Progressive" signifies that the Party will endeavour to move on, and no one can doubt that movement in regard to London is required. The result, therefore, can have been no surprise to those who watched the contest dispassionately. It is an unsatisfactory contest, because such points as the conduct of the Works Department, the insistence on betterment to the loss of improvements, did not really come much into the elector's mind. Nor, indeed, can questions of detail ever, in a huge place like London, much affect elections, for the voters will seek for broad issues, and the Government by its suggested attack on the County Council gave many voters this issue,—were they to protect the County Council or not? and the majority have desired that it should be protected.

What, then, is, so far as it is possible to foresee, the practical result of the election as regards the future? It seems probable that things will go on for the next three years much as they have lately done. The Progressives will endeavour to get the water supply of London under the control of the County Council, and, since the electorate of London has practically affirmed this policy, we are inclined to think that the Government will be acting wisely in endeavouring to bring in some measure to this effect. We have never concealed the opinion that the water supply should be managed by a special public body. It is becoming obvious, however, that a dangerous delay must ensue unless it is handed over to the County Council. The Works Department will probably be allowed to continue its work in peace: the practical criticism of the details of its business with full knowledge is the surest way to keep it in order. As regards improvements generally, it may be that the new Council will endeavour to put "fads" on one side, and carry out many improvements which are so urgently needed. The traffic of London in the streets urgently demands attention. The increase of tramways is desirable. London is behind every other town in the world in this respect.

There is another thing to be said. The public has seen various foolish acts done by the Progressive party in the recent Council. It hardly takes the same notice of the large amount of small useful and detailed work which has been performed. It is not wise to criticise too severely the errors of a party, which a public Press almost always unduly magnifies. The London ratepayer has put the Progressive party into power for the new term of the Council, and we can only hope that that party will eschew politics and endeavour to do some really good practical work for the benefit of the whole of the metropolis.

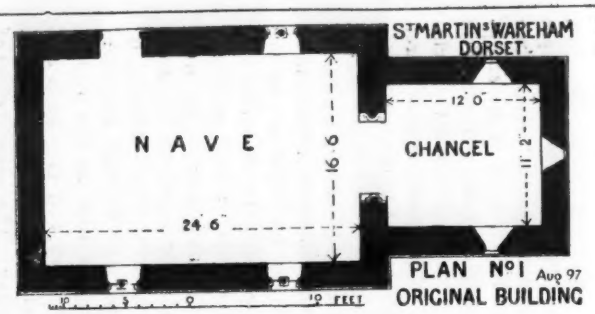
THE CHURCH OF ST. MARTIN, WAREHAM, DORSET.

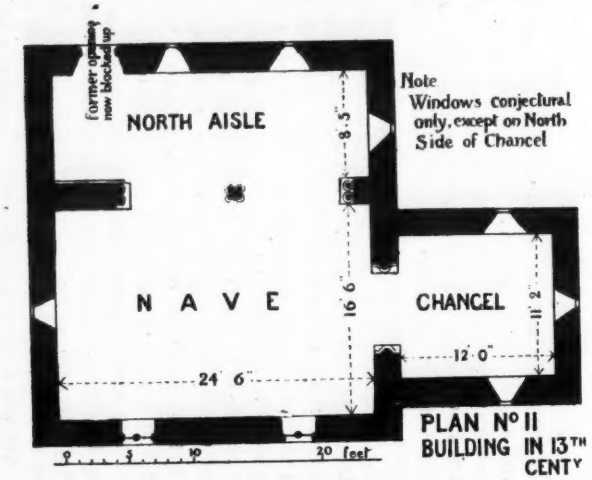
BY MR. CHARLES LYNAM, F.S.A.

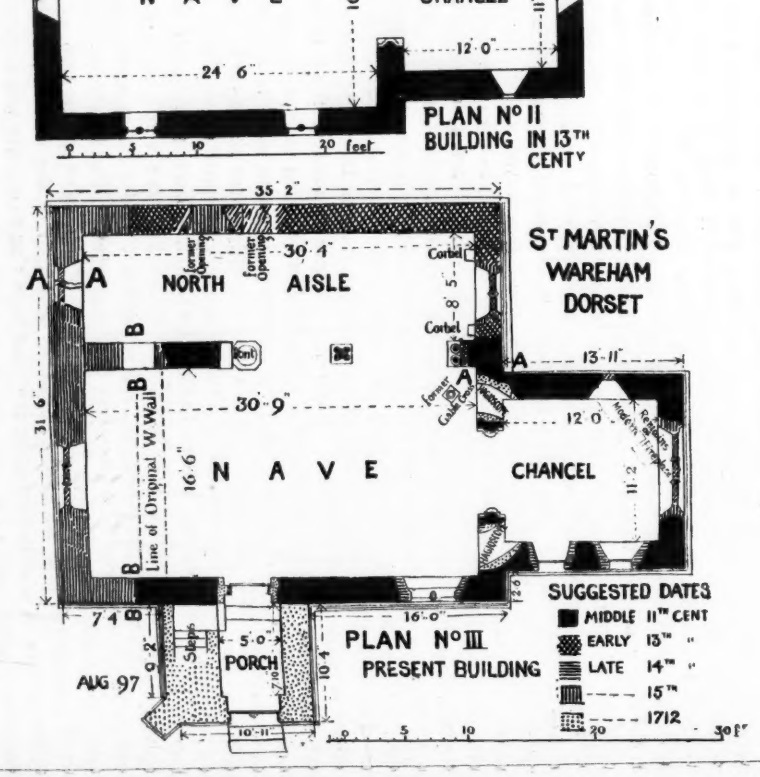
THE visit of the Royal Archæological Institute last year was the incentive to a study of the details of this church, resulting in this attempt to illustrate and describe them.

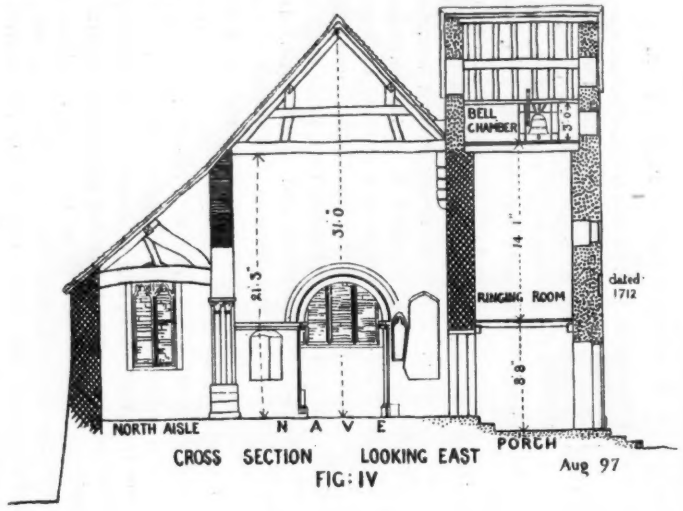
The little town of Wareham is of exceptional interest, both to the antiquary and architect. It lies on rising ground between two rivers, which bound it on the north and south sides. Its site is a square, enclosed on the south side by the River Frome, and on the three other sides by a great wall of earth with an inner and outer ditch. Its main streets run through the middle of the square in different directions and at right angles to one another. In the south-east quarter is the Priory Church and quay, representing a fine group of buildings from the north-east, and possessing many features of great interest. In the south-west quarter is the small Church of the Holy Trinity and the Castle Mound. In the north-east quarter stands the little Church of St. Martin. Throughout the town there is an absence of early Mediæval work except in the churches, but there are many examples of simple domestic buildings of Queen Anne's time and onwards. In South-street is an exceptionally fine example of an unpretentious town house. It is a town where the architectural student may spend two or three days with profitable study of the simple detail of the early part of the last century.

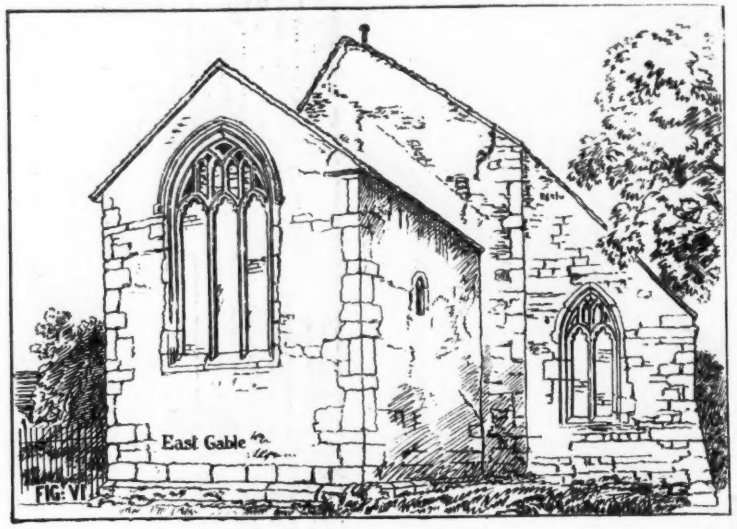
The first sight of the Church of St. Martin from the south is extremely impressive in its exceptionally picturesque character; to this its peculiar situation lends its aid. Standing almost upon the edge of a deep cutting in the road, which bounds its site on the west, and down which lower buildings are seen, backed on the north by well-grown trees; its small area but high altitude, with its gabled south porch rising as high as the church itself; its touch of ivy and grey walls and roofs, produce a picture not often presented in so small a building. The general effect of the exterior is equalled by that of the interior. Its high walls; a north arcade of two bays; a chancel arch flanked by an opening on each


St MARTIN's WAREHAM DORSET
NAVE
CHANCEL
12 0
16 6
11 2
24 6
PLAN No I Aug 97
ORIGINAL BUILDING
10 9 0 10 FEET


Former opening now blocked up
NORTH AISLE
NAVE
CHANCEL
16 6
9 3
11 2
12 0
24 6
Note
Windows conjectural only, except on North Side of Chancel
PLAN No II
BUILDING IN 13TH CENTY
0 5 10 20 Feet


35 2
St MARTIN'S
WAREHAM
DORSET
NORTH AISLE
30 4
30 9
16 6
Line of Original W Wall
NAVE
CHANCEL
12 0
13 11
11 2
31 6
8 5
7 4
16 0
5 0
9 2
10 4
10 11
PORCH
Slope
AUG 97
PLAN No III
PRESENT BUILDING
SUGGESTED DATES
MIDDLE 11TH CENT
EARLY 13TH "
LATE 14TH "
15TH "
1712
0 5 10 20 30 Feet


BELL CHAMBER
3 0
21 3
31 0
14 1
RINGING ROOM
8 8
dated 1712
NORTH AISLE
N A V E
PORCH
CROSS SECTION LOOKING EAST
Aug 97
FIG: IV


East Gable
FIG: VI

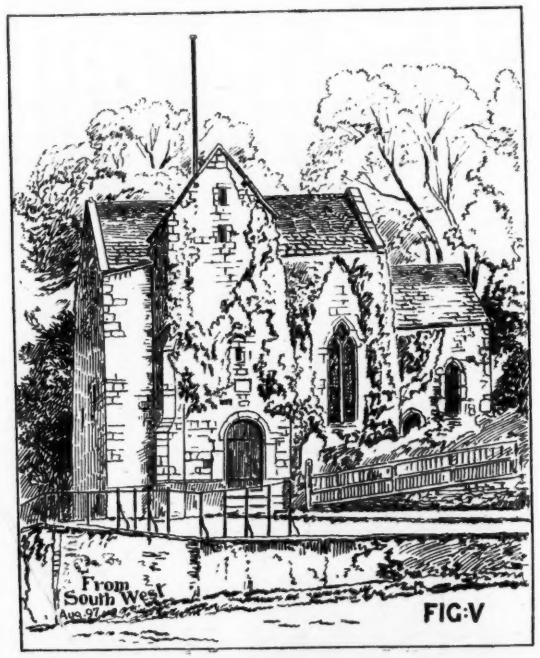

From South West
Aug 97
FIG: V

FIG VII: Looking East

side; the remains of post-Reformation texts and earlier frescoes painted on the white-washed facings; the barn-like roof, the riven rents in the walls, and the floor of sand, together with a general air of forsaken neglect, give to the place a very extraordinary yet interesting effect. The architecture is of varying dates, the earliest being placed by competent authority as far back as the Saxon period, whilst the south porch, which lends no little to the exterior design, is inscribed as of the time of Queen Anne. It is the main object of these lines to attempt to elucidate whether or not the original parts of this building may with certainty be attributed to a pre-Conquest date.

The shortest method of describing the church will be by making reference to the accompanying illustrations, first of all observing that there are three distinct buildings clearly marked out in the work itself. Plan No. 1 shows the original church, consisting merely of nave and chancel, with a north doorway (indications of which still remain), also an early window on the north side of the chancel, and the chancel arch together with the chancel walls and part of the walls of the nave. There is evidence of the position of the doorway shown on this plan, but the windows except on the north side of the chancel, are conjectural only. Plan No. 2 shows the church after the first enlargement, which consisted only of a north aisle of two bays. There is existing evidence of the arcade and of the position of a north doorway, but the windows are conjectural only. Plan No. 3 gives the church as it at present exists, the nave and north aisle having been lengthened westward, and the porch (a quasi-tower) making a further considerable addition. Sundry minor alterations were also introduced, including in the chancel the three-light window at the east end, the priest's doorway, and also an opening, now boarded up, in its south flank; a two-light window in the south wall of the nave; also a two-light window in the east gable of the north aisle with an altar bracket on each side of it; also the windows at the west end.

With regard to the dates of these several enlargements, to a great extent the work speaks plainly for itself. Plan No. 3 shows the distinctions of dates, from which it will be seen that the original church is ascribed to the middle of the eleventh century. The north aisle was of the date of the beginning of the thirteenth century. The extension at the west end of the nave and aisle is of the late Tudor period. The great three-storied south porch is twice dated 1712. The south windows of the nave and chancel are of the fourteenth century, and also the priest's doorway. The east windows of the chancel and aisle are of the fifteenth century. This plan particularly exhibits how little remains of the original church, but there that little is, and it must be said that the keynote (of proportion, at all events) of all that has been done since, has been forced by the main characteristic of the first church—namely, its extreme height in proportion to its width—the walls of the nave being 21 ft. high and its width 16 ft. 6 in.; those of the chancel 15 ft. high, while its width is only 11 ft.

A cross section looking east is given in fig. 4. In fig. 5 is sketched a general view of the exterior from the south-west, indicating the situation in respect of the highway, &c. Fig. 6 shows the eastern gables and marks the "long and short" quoins at the angles.

Fig. 7 is an interior view looking east, giving the chancel arch and showing the ruthless manner in which this wall has been treated from time to time. Here it may be noticed that the walls of the interior are, for the most part, covered with post-Reformation Scriptural texts, and that where, in earlier times, a stirring representation of the Last Judgment would appear, the Royal Arms are conspicuous, along with the Creed and the Ten Commandments. Here and there fragments of earlier colour decoration appear. Fig. 17 shows the original thirteenth-century base to the shaft of the aisle bays, and also the present later base. Fig. 18 represents the present terminal of the west gable of the nave, and it will be seen at once that this is a reproduction of the stone now lying near to the chancel arch and sometimes described as a Holy Water Stoup.

In the south gable of the porch is a sunk and moulded panel, 18 in. square, bearing the following inscription—viz.:

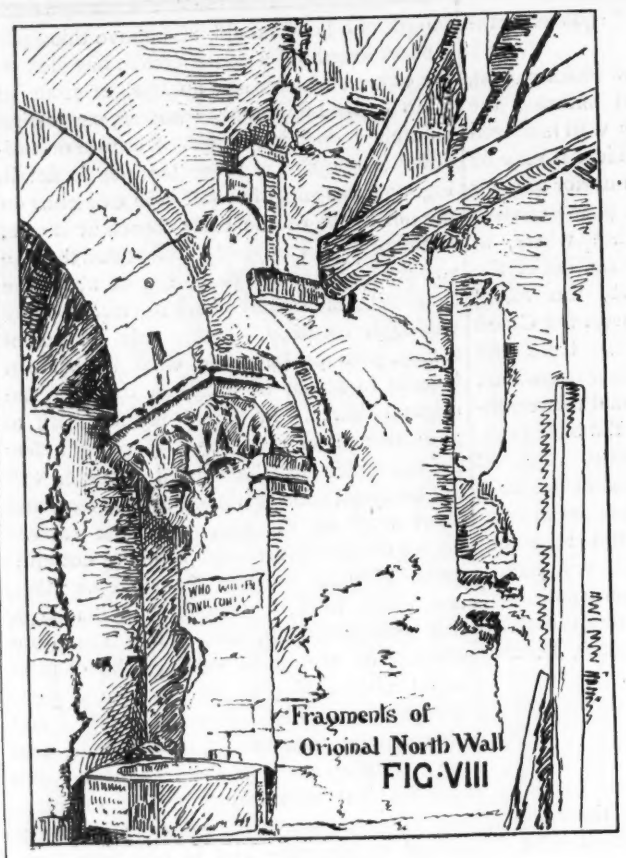
Richard Coole.
Edward Benet.
Church Ward,
Ans: 1712.

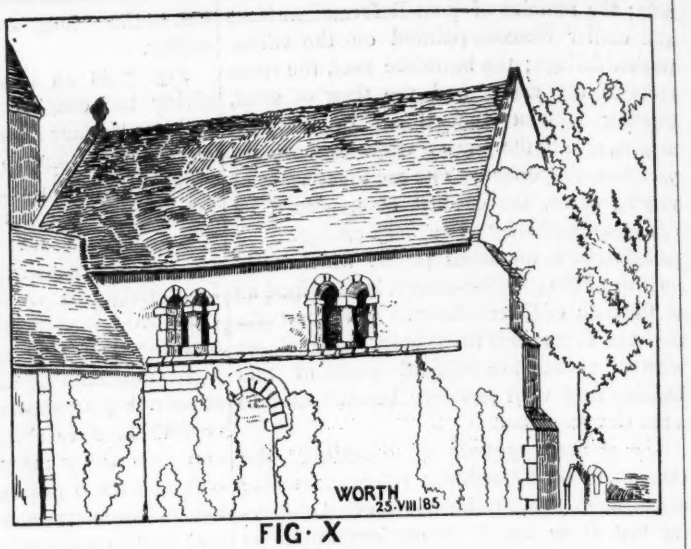
In the same wall, on one of the building stones, in line with the top small light, is cut "John Morton, an: 1712."

There is one bell hung in the upper floor of the porch, 1 ft. 10½ in. in diameter, and 1 ft. 5½ in. high, lettered as follows: "Clemant Tosiear cast me in the year of 1698." There is a shield at the beginning and between the Christian and surname and after the latter.

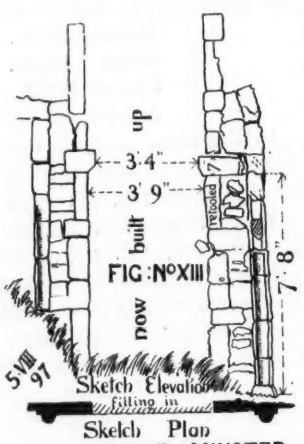
Fig. 8 is an interior sketch of the west respond with the original north wall, showing the remains of early work hereafter more particularly described. The central point of interest in the fabric lies in the question whether the parts of the first church now remaining are of Saxon design and workmanship. Competent authorities say "Yes," others affirm the contrary. So the field of inquiry remains open for those desirous of considering this debatable point carefully. It must be frankly admitted at the outset that there is a certain amount of evidence for both views, and that a positive decision is perhaps scarcely to be arrived at. That the remains of the first church are of the middle of the eleventh century no one can reasonably doubt. Its diminutive area, excessive proportion of height to width, extreme simplicity of its parts, walls having no trace of a buttress, with a plain chamfered base, the footings showing above ground, the quoins at the angles formed of "long and short" work, the masonry built of rubble only, the only remaining window (that on the north side of chancel) being small in dimension and having its glass face close to the outside, being set back only to the extent of a small chamfer on the arrises all round—these are points almost justifying the conclusion of a pre-Norman date for the early church; but above all this there is fragmentary evidence on the north side of the west respond pier of the present aisle (see fig. 9) which more than supports the other items in favour of its early date. Near this pier is to be seen not only the original outside chamfered base of the wall, but the impost of a north doorway, with the springing line 6 ft. 6 in. high from the top of the plinth. Above this impost is the lower voussoir of an arch and a short length of a hood mould, and above this again a short length of a string course bevelled on the top, on which rests an upright stone or jamb capped by another impost, suggesting an arched opening, either of arcade or window. Fig. 9 shows these features in detail. Fig. 10 gives roughly what is in existence on the north side of the early church at Worth, in Sussex. It can hardly be doubted that the two examples at this point are of about the same date, the features here referred to being well-nigh identical. After this statement it may, perhaps, be asked what further can be said in favour of a Saxon date for the original church. Perhaps it is squeamish to go further in the matter; yet there are a few points, which by the careful observer will not be unnoticed. First of all, the long and short work at the quoins of the eastern angles of the chancel and nave are not altogether absolute in their character as "long and short work." See fig. 6, and also in this connexion fig. 16. Then the little window on the north side of the chancel might very well take its place in a post-Conquest building (see fig. 11); and further, the dimensions, the details, and the proportion of the chancel arch (see fig. 12) would not be out of place in a Norman structure. Here is a feature of refined architecture, and is free from anything else like a "primitive Romanesque" design. Let it be compared with Bradford, Escombe (fig. 14), or even with Worth or Bosham, and it will be seen that the observation here noted strictly holds good. It is true that the absence of cap beyond a simple impost does not generally betoken Norman work where accompanied by an arch of this importance; but it is common enough in ruder examples. Then, both in the chancel arch (see fig. 12) and in the remains of the north doorway (see fig. 9), the usual pilaster strips are altogether absent. See also the Saxon remains of a doorway at Sherborne Minster, not far from Wareham (fig. 13).

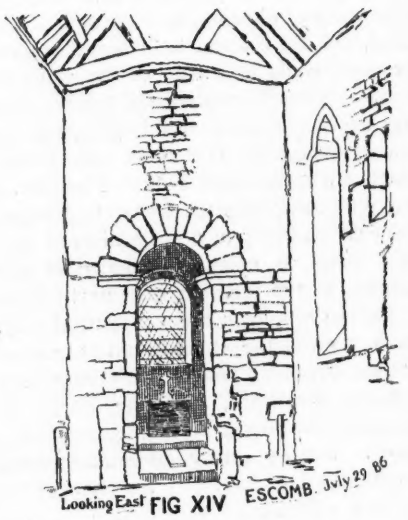
There is a complete little church of unmistakable Norman origin known as "The Heath," near to Ludlow, in Salop (plan No. 15) which, in general design, cannot be far removed from this at Wareham; yet there are distinctions which are decidedly in favour of precedence for this St. Martin's, but the time of erection between the two can only be very short. In the Norman example at "The Heath," Salop, the jambs have nook shafts, whilst Wareham has a single soffit shaft; but on each side of it there is a square nook member, and the notion of showing a best side to the nave exists in both examples; this applies at Wareham only to the arch where the square nook moulding is not carried round the arch on the east side as it is on the west. It was a dictum of Pugin's that the mediæval designer did not know what "a front" meant; but certainly the Normans did, as may be seen in these and many other examples. A soffit shaft, with arch, is common in Norman work but not in Saxon. That the church at Wareham is on the border line few will gainsay, and after the review here given perhaps it may be said he is a courageous antiquary who positively ventures to express an opinion in favour of one side of 1066 or the other for the whole of the church. Perhaps, taken altogether, the balance inclines towards the Norman rather than the Saxon period. Otherwise

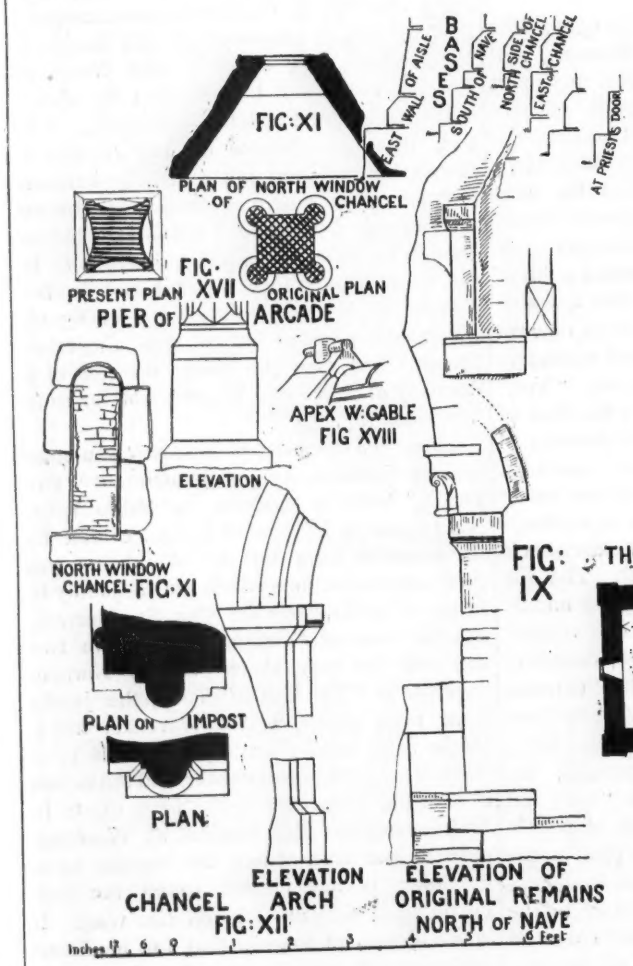


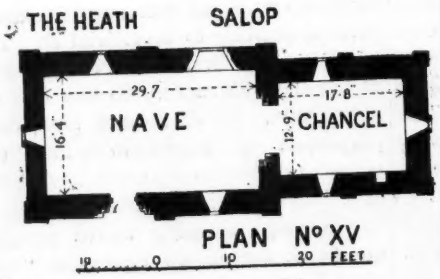


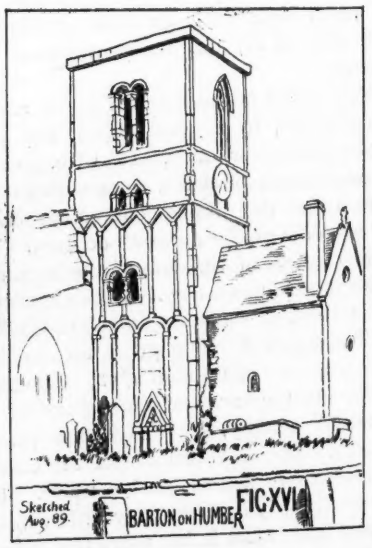
FIG·X











the Saxon work at Barton-on-Humber (see fig. 16), Stanton Lacy, Dilbury, Barnack, and elsewhere, does not represent the same school, or, if it does, it must be of a much earlier date. Nor does the early Norman work at Canterbury, Winchester, and Worcester represent the beginning of the period to which they belong. If the chancel arch and the north window of the chancel at Wareham are allowed to be Norman, then the walling and remains of the north doorway might be accepted as Saxon, very late in that period.

No one can look at the plan of this church marked No. 3, and not see how wofully the original building has been dealt with; nor can any one wonder that the walls are riven with cracks. In the chancel the east end has been broken away for a large window, and on the south flank a doorway and, window have been broken out, whilst on each side of the chancel arch considerable openings have been made without regard to any risks that might follow. In the nave a big south window has been put in near to the angle of the wall, and a doorway opened out. The west wall has been entirely taken away, and the north wall largely pierced for an arcade of two bays: the western end on the north side has been cleared away for a large opening between the nave and aisle. The wonder is that any part of the nave remains to this day. Both inside and out-

side the building there is much dilapidation. It has been said locally that the serious part of it is due to the lowering of the roadway at the west end of the church, but a critical examination of this point shows that this cannot be the case, as the west wall throughout is perfectly upright and shows no sign of having in any degree gone towards the direction of the road. Then again the most serious cracks in the walls are those at the west end of the north aisle, and in the east wall of the nave as indicated on Plan III. at AA. These are in the contrary direction to any action operating from the road. Certainly there are openings through the nave walls near to the west end at BB, on plan III., in the line in which movement of the west wall might cause, but it is perfectly clear that these cracks have originated in the want of bond at the time the west end of the church was extended. It is also apparent that the ugly crack in the east wall of the nave between its north wall and the north wall of the chancel, originated in the construction of the north aisle, due care not having been taken to keep the north-east angle of the nave wall intact. There are other open cracks of less importance in the walls, and the internal plastering is loose, cracked, and broken, which exaggerates the appearance of general dilapidation. A Churchwarden remarked to me that it had been suggested as a remedy for the defects to underpin the west wall, carrying it down to beneath the level of the roadway. At first sight this would seem to be a reasonable suggestion; but if the observations before made are correct, there is no need for such an expensive remedy, and, indeed, it would be out of place. The simple insertion of iron ties through the building, from east to west and north to south, in positions that would not interfere with the interest of the building or its sightliness, would make the fabric secure for many generations to come, without in any way altering or adding to it, and at a comparatively trifling outlay. Of course, cracks would require stopping in addition to the ties or bolts. In this way this ancient and very interesting structure might continue to be the delight of the antiquary, architect, and artist. If the floor were concreted, occasional services might fitly carry on the long-established worship still possible within its walls. However picturesque the present state of things may be, the churchman cannot but lament the lack of the continued sacred use of the venerable church. Nor can the antiquary or artist look with unconcern on the threatening aspect which dilapidation too plainly bears.

C. LYNAM.

NOTES.

Architecture in Parliament.

ON Friday last week some questions were asked in the House in regard to the new Government Offices, and we learned from the First Commissioner of Works that it was the intention of the Government at once to proceed, on the lines of the Report of the Select Committee of last Session, with the erection of the War Office and the Parliament-street offices. In reply to a question as to how the choice of designs was to be made, the First Commissioner said that the Government had not got so far as that yet. But he added that the Government were in hopes of producing better buildings than the existing public buildings of London, and more in keeping with the other buildings in Whitehall. "The art displayed in the new Admiralty buildings and in the new Scotland Yard was not, in his opinion, worthy of the positions which it occupied." It appears therefore that the First Commissioner of Works, who is the responsible official for the architectural work of the Government, groups together under one ban the new Admiralty, which as far as architectural design goes is the worst public building ever erected in this country, and Mr. Norman Shaw's Scotland Yard building, one of the most characteristic and picturesque public buildings in the country, which has been the admiration of architects and artists ever since its erection! Mr. Akers-Douglas we have no doubt means well, but apparently he is absolutely unconscious of the difference between a building which is a work of art and one which is not. After this, the cause of official architecture seems hopeless.

Peterborough Cathedral.

WHEN, on the death of Mr. Pearson, Mr. Bodley was appointed architectural adviser to the Dean and Chapter of Peterborough, it was evidently supposed by the "anti-scrape" party that now they were going to have their ideas carried out; Mr. Bodley belonged to a different school from Mr. Pearson, and one of the critics who had been most prominent in throwing stones at Mr. Pearson observed complacently that "this was a better appointment than had been expected." And what is the result? Mr. Bodley has recommended just the same course for the south gable which Mr. Pearson recommended for the north one, viz.: taking it down and re-setting it, and for just the same reason, that the masonry in the rear of the gable is in such a state that he thinks no method of strengthening the wall here is practically possible. It will be interesting to see whether the gentlemen who hurled anathemas at Mr. Pearson for giving the only practical advice possible under the circumstances will proceed to pay the same kind of compliments to Mr. Bodley, whom they have hitherto regarded as an ally.

St. Alban's again.

AMID the wholesale mischief wrought by Lord Grimthorpe at St. Alban's Cathedral, the unique central tower has hitherto been spared, but a hand has now been laid on that also. The battlements on the south side have been taken down and are being rebuilt, and it may be presumed the same fate awaits those on the other three sides. After the greater reconstructions this may seem hardly worthy of protest, especially since it is excused on the ground that the old brickwork is decayed and in danger of falling. But everything depends upon how a work of the kind, when it becomes necessary, is done; and far from having any confidence that good taste and feeling and reverence will be displayed in the reconstruction, we can only judge from the past that they will be conspicuous by their absence, and that a further disfigurement is likely to be added to this once interesting structure. The protests of architects against the proceedings of his lordship are no doubt discounted by the public, who probably suspect that professional jealousy may have something to do with them. Is it too much to hope that, even at this eleventh hour, some of those enthusiastic amateurs whose indignation boiled when the most skilful and conservative of restorers presumed to touch the west front of Peterborough, may be able to make the public understand what has been done and may yet be done at St. Albans? It is rumoured that a new roof is to be put on the tower. That may not mean any harm; but suppose a high-pitched roof is intended!

The "Old Paris" Committee.

AT the last meeting of the "Commission de Vieux Paris" it was decided to have a plan made showing the natural contour of the ground at the Gallo-Roman epoch, as a preparation for studying the successive developments of the city, and on this plan are to be drawn out also the lines of Roman roads still existing in the Department of the Seine. It was also decided that in future the Municipal Administration should submit to the Committee every project for new streets, before commencing them. The Committee also discussed the question of the acquisition of the ancient Hôtel de Sens, one of the most interesting examples of civil architecture of the Middle Ages.

Metropolitan Public Gardens Association.

THE fifteenth Annual Report of this Association records, as the work which it has succeeded in carrying out during the year 1897, the laying out of three new gardens; provision of gymnastic apparatus for one playground; drinking fountains placed on three sites; seats placed in twelve localities; trees planted in three places; and assistance given in the preservation, acquisition, or improvement of thirteen open spaces. Among other things we are glad to see that a "Drinking Fountain Designs Committee" has been formed, the Association having felt (and rightly) that there was great room for improvement in the designs of street fountains; and prizes of 15*l.* and 10*l.* have been offered for suitable designs for fountains in durable materials to cost not more than 100*l.* and 50*l.* (including their erection). The competition was closed on November 15, and twelve competitors sent in drawings, which are under the consideration of the committee, with the assistance of the advice of Mr. Alma Tadema. The report gives a long list of open spaces which the Association is endeavouring to secure, and of other work in hand, in which it is to be hoped it will be successful. It is a curious indication of the habitual indifference in the present day as to the beauty and healthfulness of cities, that such an Association should be necessary; but we must take things as we find them, and be grateful to those who endeavour to mend them.

Electric Fuses.

AN eminent electrician recently advocated that the main fuse of the electric wiring of a building should have a greater margin of safety than fifty per cent. He says that the function of the main fuse is to prevent fires from the overheating of the house mains, owing to an accidental short circuit between them. Now this is an extremely rare occurrence, but yet the main fuse has a notorious habit of breaking the circuit and putting out all the lights at inconvenient times. The reason of this is apparently that the difference of expansion between the metal alloy of the fuse and the iron or brass nuts clamping it gradually squeezes the wire out, and the

heating due to the increased resistance of the contacts melts the wire. There is no more frequent accident in electric lighting than this, and it has prejudiced many against the electric light as being untrustworthy. The electricians, however, who are recommending that the main fuse should have a margin of safety of 300 or 500 per cent. seem to us to be recommending too drastic a remedy. The main fuse not only guards against short circuits between the mains to the distributing-board, but also against the much more frequently occurring short circuit between them or the meter and "earth." A main will generally take fifty per cent. more current without dangerous overheating, but it will rarely take a hundred per cent., and so the risk of fire would be greatly increased. We think that fifty per cent. is a very generous margin. The true remedy is to use proper clip fuses, and so guard against the differential action due to the different co-efficients of expansion by heat of the fuse wire and the nuts clamping it.

Changes in Holborn.

WE have lately adverted to the demolition of the "Old Bell," and to the alterations that are being made at what was Anderson's, or the "Black Swan," Distillery.* Further changes are taking place, and will quite transform the character of the thoroughfare's northern side. The premises of a company of outfitters, between the site of the "Old Bell" and Leather-lane, are in course of reconstruction by Mr. J. Carmichael, after the designs of Mr. Joseph Sawyer. The two old houses at the opposite corner of Leather-lane, Nos. 129 and 131, Holborn, distinguished by the square bays of their first and second floors, will shortly give way to an extension of the adjoining "Ridler's" hotel. Then next, westwards, is the front block of Furnival's Inn, built in 1818-9 after Henry Peto's designs. That block is now vacated, and the site, we are informed, has been taken for a further extension of their premises by the Prudential Assurance Company, to be built by Messrs. Holland & Hannen, contractors; the company's architect is Mr. Alfred Waterhouse, R.A. For an extension of their offices, the Prudential acquired from Lincoln's Inn, three years ago, "Woods'" hotel, along the north side of Furnival's Inn, so that, with the demolitions now in progress there, the Inn will soon entirely cease to exist. At No. 15, on the top floor, Charles Dickens lived for a while after his marriage with Katharine Hogarth, daughter of the editor of the *Evening Chronicle;* it is not commonly known that his first lodgings in the Inn were at No. 12, in 1835—two years later he removed to Great Doughty-street. In our "Note" on the "Old Bell" we mentioned that on the front it bore the arms of the Fowlers, of Islington; that relic has been deposited in the Guildhall Museum.

The Chapel, Tottenham Court-road.

WE understand that Mr. Rowland Plumbe has prepared designs for a new chapel to be built by Messrs. Kingerlee, of Oxford, whose tender for 11,101*l.* is accepted. The existing iron structure was set up in place of the original chapel—commonly known as Whitefield's Tabernacle—which in 1889 was condemned, the foundations having given way. Of that chapel, erected on the site of Crab and Walnut Tree Field, by Coyer's Gardens, and a large pond, called the "Little Sea,"* John Whitefield laid the first stone in May, 1756; his resources were aided by Selina, Countess of Huntingdon, Benjamin Franklin, and, it is said, by members of the Royal Family, together with Garrick, who gave 500*l.* for paying the workmen, one of them being his own stage carpenter at Drury-lane Theatre. The original building, about 70 ft. square on plan, with a hipped roof carrying a square lantern and cupola is illustrated in our article of June 13, 1891, on "The Bedford Estate." To that, in 1759-60, Whitefield added a front portion, octangular on plan, nicknamed "The Oven." In 1828 the lease expired; the chapel remained closed until 1830, when the trustees bought the copyhold and made considerable alterations in the structure, which assumed its more familiar form, with portico and turrets, thirty years later. The property has been the subject of litigation extending over many years. In 1887-8 a disorderly fair was held in the burial ground, which, it seems, was unconsecrated, and had been used until 1853 for the interment of, it is said, nearly 30,000 bodies: see our columns of August 28, 1888. The London County Council ultimately bought the ground for 5,000*l.*, the Vestry of St. Pancras contributing, and opened it to the public on February 16, 1895. The remains of Whitefield's wife, of John Bacon, R.A., and of Toplady, were removed into a vault beneath the organ. Whitefield's chair, and the rostrum of his mahogany pulpit, which in his time rested on a pedestal, we saw in the vestry and upper schoolroom nearly eleven years ago.

Houses Occupied by the S.P.C.K.

THE Society for Promoting Christian Knowledge, who have reached their bicentenary in the current week, held their first meeting in Mr. Justice Hook's house on March 8, 1698-9. Their domiciles in London have been very numerous. For a few years the Society met at Samuel Brewster's chambers in Lincoln's Inn, and at Child's coffee-house in St. Paul's Churchyard. In 1703-4 they assembled at (old) Sion College, Mr. Shute's house in Bartlett's-buildings, Holborn, and at Mr. Ibbot's. In the following year they met in St. Dunstan's coffee-house, and the chambers of W. Melmoth, bencher of Lincoln's Inn, who compiled a valuable record of the history of his Inn. Having returned in 1716 to St. Dunstan's Quest-house (from No. 6, Serle's-court, Lincoln's Inn-fields), they then first secured separate premises of their own, April 4, 1728, in Bartlett's-buildings, which they finally quitted in 1827, having in the interval (October 1758 to October 1777) occupied No. 9, Hatton-garden. From Bartlett's-buildings the Society removed in 1827 to Newcastle House, Lincoln's Inn-fields, which they had bought of the Duke of Newcastle, and occupied it jointly with a well-known firm of solicitors. In November, 1879, they migrated to their present premises in Northumberland-avenue, erected on a freehold site obtained by them.

The Society of Painter-Etchers.

THE distinguishing feature of this year's exhibition of the Society of Painters-Etchers (at the Gallery of the Society of Painters in Water Colours) is that the art of mezzotint is specially represented, by nearly one hundred examples. A good many of these do not properly come within the province of the Society's exhibition, the word "painter-etchers" implying (if it means anything) original work by etchers, whereas a large number of these mezzotints are copies of pictures and drawings by Turner and other artists; many of them, especially those of Mr. Frank Short, very beautiful work, but still copies. Among the original mezzotints are some beautiful landscapes by Mr. J. Knight, Nos. 208 and 209 especially; it may perhaps be said, indeed, that Mr. Knight's capabilities show better in this monochrome work than in his paintings, which, though always fine in their way, are a little mannered and restricted in colour. Mr. Carroll's "Cloud Study" and "After a Storm" (127, 128) are also admirable examples of what mezzotint can achieve best. Among the etchings proper are a considerable number by Mr. Strang, all powerful, but some of them exceedingly ugly and grotesque. Among those which are to be admired thoroughly are Mr. Robertson's two little sketches in Sandwich (26, 27), Mr. Holroyd's "Study of a Head" in dry point (32), Mr. Haig's highly-worked and effective "San Marco' (40), Mr. Watson's "Lincoln Cathedral" (45), Mr. Schumacher's "Potato Harvest in the Pennant Valley" (47), a composition reminding one of Jules Breton; all Mr. Evershed's contributions (66 to 70), pure line etching; Mr. Slocombe's "Fishing Boats Unloading" (88), M. Helleu's "La Dormeuse" (246), Mr. Legros' "Retour du Bois" (37), chiefly remarkable for the fine and pathetic character of the figures—the landscape and surroundings are too roughly handled. There are also some excellent works by Mr. Charlton and Mr. Burridge, and some very good dry-point figure studies by Mr. Slocombe.

The Goupil Gallery.

A COLLECTION of works by painters of the English, French, and Dutch schools, at the Goupil Gallery, though rather unequal in interest, contains some works well worth looking at. Among these may be specially mentioned Mr. Swan's beautiful little nymph playing in the sea, in "The Trireme," and Maris's "Towing at Sunset," a picture painted in an exceedingly broad, one may almost say rough style, but of great power and truth of effect.

The Paris Exhibition.

THE Prince of Wales visited the site of the Paris Exhibition last week, where the models for the principal palaces were explained to him by the architects, and he afterwards went over the work-yards for the buildings already commenced. The architects expect to have the two principal palaces finished before the end of next year. The engineers, MM. Résal & Alby, also exhibited to the Prince the models for the new Pont Alexandre III. The foundations for this bridge are nearly completed, and it is expected that the bridge will be open for traffic on New Year's Day of 1900.

The Nave of Exeter Cathedral.

IN a paper read to the Exeter Diocesan Architectural and Archæological Society, Canon Edmonds deals with "The Length of the

* "Notes," May 22, and October 30, 1897.

* See the map engraved by Basire and Seale (after Rocque), 1749.

Norman Nave of Exeter Cathedral." After disposing of the discredited theories that the Norman west front did not extend beyond the towers or north porch, he produces the evidence of existing remains and measurements to show that the nave of the Norman cathedral was as long as it is to-day. Interesting as this evidence is, the conclusion, after all, is identical with that arrived at by the late Archdeacon Freeman, and quoted in the *Builder* for June 6, 1891, though it is certainly satisfactory to have this view confirmed in so able a manner.

THE MIDDLE AND LATER RENAISSANCE.*

BY PROFESSOR AITCHISON, R.A.

In a former lecture I told you that the Manuscript of Vitruvius, or what is now called the Codex, was discovered by Poggio Bracciolini at St. Gall in 1414; that it was rapidly copied and dispersed; and that somewhere about 1486 the "Editio Princeps" was published in Rome, and consequently every one who wanted could be supplied with Vitruvius' work, or at least could study it, and consequently knew more about the methods pursued by the Romans than the first measurements would enable them to deduce. The Renaissance artists not only looked upon Roman architecture as the perfection of all possible architecture, but they possibly thought that it would help them and Italy to resemble the Romans, and get peace, happiness, and universal power. They then became inclined to look with somewhat of contempt on the works of their predecessors. All the recollections of Romanesque Byzantine and Gothic buildings, and that charming freshness which came from an imagination unshackled by rules and from dealing with a new style of which they knew but little, was looked on with pity akin to contempt, and the architects sought to do everything according to the Roman rule, and to copy features and mouldings as exactly as possible from Roman remains.

The Italians had by no means lost all their pristine vigour and originality, but still they were much more fettered by rule than heretofore. Michelangelo, Vignola, Jacopo Sansovino, and above all Palladio, had become thoroughly acquainted with Roman examples and Roman rules, and although this gave them a greater power of producing dignified buildings, it removed their work very far indeed from the charming freedom and originality of the early quattrocentisti, and gave their work a more or less mechanical look. As Michelangelo was so fond of saying that "he was no painter," he might have added that he was no architect either; but he was one of the great men that the world has seen, and achieved a peculiar sublimity which should partially blind us to his grave faults.

The bulk of the early fifteenth century men merely wanted to get greater simplicity and grace in their work than Gothic had afforded them, and used their pilasters and columns, their pedestals and entablatures, to show that they were not altogether ignorant of classical models; but Michelangelo, who was no constructor, used his orders just as he wanted to produce some particular effect, without the least regard to structural propriety; at the staircase of the Laurentian Library the coupled columns are let into recesses in the walls, and have their bases, which stand on the solid wall, apparently supported by coupled trusses in the front, but for all that the staircase hall is one of the most striking things that one has seen, and the staircase itself is of most vigorous and original design, though without much more reasonableness than the position of the columns themselves. The building on the Capitol at Rome is also attributed to Michelangelo, and is certainly both vigorous and striking, but his Medici Chapel, commonly known as the new sacristy of San Govenzo, is in my opinion the masterpiece of his architectural works. On first going into it, an architect is aghast at the liberties he has taken, and at the poverty of some of his inventions; two carrots upside down support the the capping of little projections over the secondary pilasters, while a little truss supporting nothing goes over the rail and into the middle of the panel above the statue of Giuliano; but on remaining in the chapel for a sufficient time you lose sight of all its solecisms and feel that it eventually arouses in you a feeling of sublimity perhaps unique in the works of the middle Renaissance, no doubt greatly owing to the superb sculpture.

By way of a parenthesis I must say that the capitals of the secondary pilasters are both original and effective, though the eggs and tongues upon the necking are upside down. To show the enormous pains Michelangelo would take, below the string which supports the sitting statue of Giuliano there is a row of antique masks, forming an ornamental band below the dentils; from the other side of the chapel these masks seem identical, but, on going up and examining them, you find that there are not two alike.

There is one plea I must put in for Palladio (1518-1580), that his Basilica at Vicenza has got those qualities of breadth and simplicity that mark it out as one of the great triumphs of the latter Renaissance. The constant repetition of one feature along so vast a building, and its simplicity, makes it attain a look of sublimity by which it carries off the palm from the more graceful Library of St. Mark's, by Jacopo Tatti, called Sansovino.

San Micheli, the great military engineer and architect, has designed some very fine gates, but I think the Porta Nuova at Verona has got the same delightful effect that Brunellesco got in his Pazzi Chapel, and Palladio in his Basilica. I can hardly say whether the omission of the orders in the fronts of domestic buildings can be traced back to the Romans, but certainly the pedimented window-heads can. They are to be found in the so-called Temple of Diana at Nîmes. Peruzzi mostly omitted the orders; Raphael did the same in his Pandolfini Palace at Florence, and so did Antonio Piccone, called San Gallo, in the Farnese Palace at Rome. The top story of this is attributed to Michelangelo, and I think the badly designed windows of the second floor are his, and, without doubt, the large cornice must have been his idea, although it was said to have been profiled by Vignola. When one comes to think of it, nothing can be more ridiculous than making the columned fronts of an abandoned temple into a dwelling house; directly it has struck you, you look at the great bulk of the Renaissance work, which is the mere filling in between the columns, as a device for rendering buildings that have gone out of use habitable; but if one can overlook this solecism, many of the façades are ingenious and effective, and though all those delicacies and improvisations that give so much charm to the early Renaissance buildings are sacrificed, a more stately and dignified building is obtained. Most of the buildings I have mentioned I have seen, and among those of what may be called the Middle Renaissance, none is more effective or more striking than the Communal Palace at Brescia, said to have been built by Formentone in 1508.* Of course, its colossal size is a very great element in its impressiveness; even a common brick wall, if very high, and seen from a narrow passage, has a certain sublimity about it, as when you look up on a moonlight night between the Asinelli and the La Garisenda at Bologna; but here at Brescia, besides its size, it is of splendid marble with much admirable carving, and artistic devices of the highest order. The original front consists of two stories crowned by a tall balustrade. The ground story consists of three enormous arches supported by large piers, with moulded architraves and imposts, and I may say that each of these piers is about 8 ft. wide; the arched openings lead into what once seems to have been an open market. In the centre of each pier is a Corinthian column supporting a light entablature; a low balustrade above it, gives height to the whole front. In the frieze of this entablature are lions' and human heads of such great projection that they look like gargoyles, but they convey the idea of length in the frieze by their repetition; in the spandrels of these arches are two large hemispherical sinkings, each filled with a bust the size of life, or larger. Here you have six hemispherical recesses with sharp circular edges, filled with deep shadow, from which the large busts come out light; the five heads above act almost as a scale to make you recognise the width of the openings, and the length of the front, while the balustrade above has four balusters and an interval in the distance between the centres of the lions' heads. At the back, and standing slightly above the top of the balustrade, is the podium for the pilasters above, and this podium is broken forward under each main pilaster and under the window pilasters to form pedestals to them; the angle pilasters have Corinthian caps. The two pilasters next the centre window have a deep necking, highly enriched, as well as shallow capitals, and the panels of the pilaster-shafts are also carved in high relief. These pilasters stand in the middle of a very shallow pier, the sides of which go right round the space between the main pilasters and the windows, and form a panel; in the centre of these panels are enormous bosses in fluted circular dishes, with floral corners. The windows are ornamented with side pilasters, the top two-thirds being fluted and the lower third reeded, which support a deep entablature. The architrave has three fascias and is quite plain, the frieze is carved with animals and cupids among the scroll-work in high relief, and has a modillion cornice. The window-heads come up to the soffit of the main entablature of the building. In the architrave over the centre window is a large plain slab lettered. The top balustrade is blank and very lofty, and seems originally to have crowned the building; over each pilaster stands a figure holding a water-pot, which possibly at one time carried off the rain-water from the roof. On the balustrade pedestals at the angles of the building are two obelisks with balls on the top, and at the side of each and over the central figures in front of the balustrades are isolated and draped figures. No one can deny that these arrest the attention, but there seems no propriety in their introduction, and I think the building would look better without them. They do not show now on account of the octagon of later date, probably intended to carry a dome. The main effect is gained by what we moderns call symmetry by proportion, and by the disposition of the light on the building and the shade of the openings.

The Palazzo Farnese is, perhaps, the most striking of all the great palaces that are treated without the orders, and where the effect is produced by the outline of the palace, by the windows, and by the massive cornice alone. The palace is of colossal size, and consists on the ground floor of twelve windows with a central gateway. The sills of the windows are moulded, and the upper moulding is carried through to form a dado; the sills themselves are supported by large and heavy consoles under the architraves. Outside the window architraves there are two vertical panelled sides that have wide trusses springing from them at the top, and the whole window is surmounted by a simple cornice. The space between the tops of the window heads and the string above is very deep in consequence of most of the chambers being vaulted. The centre gateway is rusticated and has rather the air of being an alteration, as it is brought so close up to the two side windows that flank it that the rustications cut off the profiles of the cornices, and the whole feature is out of character with the palace. There is then a deep string with a frieze below it ornamented with fleurs-de-lys, being a continuation of the cornice to the doorway. Above this is a moulding forming a dado that runs the whole length of the front, breaking forward round the pedestals that support the composite columns of the first floor windows with an entablature and pediment above them, the pediments being alternately triangular and segmental. The balustrade over the entrance-gateway is of the same height as these pedestals, and over the gateway is a large Venetian window. The two sides of the window consist of two pilasters, with a column in the front of each, while two other columns within the pilasters complete the window. The top of this central window is not pedimented, but it is marked by three shields: the large one in the middle is gigantic, with the crest running up to the string of the next floor, while the smaller shields are placed over the side columns that project. The top floor, which is attributed to Michelangelo, is by no means happy. It has a similar dado to the one below, but instead of pedestals, coupled consoles supply their places, and support the two thin Ionic columns of the window. These windows have triangular pedimented heads all alike, but for some reason best known to the architect, and which looks like a whim, the

* Being the sixth and last Royal Academy lecture on Architecture this Session. Delivered on Thursday afternoon, February 17.

* An illustration of this building will be found in the *Builder* of February 23, 1895.

windows, instead of being square-headed, are round, their archivolts running up to the soffit of the cornice, which is cut back almost to the wall, giving the notion that the pediment was to be lifted higher by levers at each end. Immediately over them, after the deep space left for the vaulting of the rooms, comes the main frieze, ornamented with fleurs-de-lys in high relief, beneath the immense cornice. The angles of the building are rusticated, with long and short rustications. I think for an ideal effect the end windows are brought too near the angle rustications, but the whole effect of the Palace is dignified and majestic, and, apart from its immense size, this dignity is mainly arrived at by simple repetition. It is doubtful if any building of modern times has so majestic an effect, or reminds one more of a palace that a great Roman, like Agrippa, might have chosen for his dwelling. There is, too, a feeling of admiration and respect for the architect who sacrificed everything to produce the particular effects he wanted, simple dignity and majesty. Here, at least, the Italians had got the Roman ideal, but bought at the sacrifice of almost every grace and beauty, for, though it is so grand and so majestic, it is also unutterably dull, and we cannot help wondering whether the uniform window properly lighted each room. I think it may be looked upon as the very last step taken by the architects of the later Italian Renaissance before they indulged in rococo caprices or contortions.

The building surrounding the courtyard of the Spada Palace, by Guilio Mazzoni, 1565, is striking by its stucco ornament, as is also the courtyard of the Marino Palace at Milan, by Galeazzo Alessi, 1550-1572 (see lithographs of these two palaces).

Baldassare Longhena is believed to have been born between 1600 and 1604, died when he was over eighty, in the year 1682, and is said to have kept on his mason's shop to the last. He was a contemporary of Bernini, and was only younger by a few years, and was, in my opinion, as an architect, decidedly his superior, for, though great credit is given to Bernini for dwarfing St. Peter's by the enormous Colonnade he built in front of it, it is one of those achievements, of which, in my opinion, no architect need boast.

Longhena built the Rezzonico Palace on the Grand Canal, bought by Browning the poet, and now possessed by his son, as well as the Palazzo Pesaro. The last is certainly the palace in Venice which most strikes the stranger on his first visit, be he architect or not; and though it has many faults, one must not forget that the captivating of the eye of the multitude is an achievement. It is grand in size, and its front walls are of enormous thickness. The ground floor is rusticated, and the sides are of two stories; the centre has two arched gateways running up to the cornice, with a niche between them. Its rustications, cut into facets, are rather too sparkling. The front is of two stories above the ground, and it is horizontally divided into a wide centre and two narrow sides by coupled columns. The first floor has a rococo balustrade showing the tops of the pedestals of the Ionic columns which support an entablature; at the back of the columns is an arcade supported on small columns with enormous floriated keystones and figures in the spandrels; the top story has composite columns standing on high pedestals, on which are deep blocks under the bases of the columns and balustrades between the pedestals. The columns support an entablature with a frieze of exaggerated depth, through which run the consoles of the cornice over each column; the rest of the frieze between them is ornamented with festoons and other sculptured ornaments. Behind the columns the top story is arcaded on composite columns with keystones flush or projecting beyond the main architrave, and with sprawling figures in the spandrels. But in spite of the too sparkling rustication, contorted figures and rococo details, it strikes one as being the work of a great man. His still more famous church of Santa Maria della Salute is built on a marvellous plan; what may be called the nave is an octagon, having an ambulatory serving for the chapels outside it, and with the great dome over it; between it and the choir is a long narrow chamber, rounded at each end, with a dome in the middle, while the altar stands in the front of the choir. The outside of this church has been more often painted, I should think, than any other church in the world. Its domes and towers compose admirably from almost every point of view, and the great buttresses that spring from the drum and abut the thrust of of the dome have their ends carved into scrolls, which are peculiar but most effective; and from the back of each of these scrolls rises a pedestal on which stands a gigantic figure. It has often been said that Longhena took the idea of these scrolled buttresses from one of the illustrations to the Hypnerotomachia of Poliphilus, but it is quite as much like any of these illustrations "as a hawk is to a handsaw." The main entrance front of the octagon of the church is paraphrased from a Roman triumphal arch.

I give you the front of the Palazzo Medici at Rome, by Vansanzio, the Dutch architect of the seventeenth century, because it is the French Academy at Rome.

I give you a few of the later churches, and by no means the worst, to show how the Renaissance architects fell into mere costliness, difficult workmanship, and distortion, as the natural outcome of an art not founded on construction, whose original aim was to imitate Roman architecture. The public will have novelty at any cost; but this novelty comes naturally through new wants, greater knowledge, and improved æsthetics, if properly founded and carried out. In Italy the love of pure beauty, of native invention, and of great artistic skill, the very passion of the artists of the early Renaissance had exhausted itself, probably the race itself had sunk, and all the grace and originality had given place to a dull pedantry, as may be inferred from the writings of Milizia. The artistic craftsmen no longer pursued architecture, and there was not wit enough left to see that Roman architecture itself was but a sort of bungle of Greek forms applied without logic to the new sorts of buildings of the Romans. The only legacy the late Renaissance left us was the idea that we must copy some one else's work, instead of inventing one for ourselves; so we have had imitation Greek, imitation Gothic, and then the imitation of every bastard style the various countries of Europe have produced. I am happy to say that architects are beginning to have their eyes opened, and see that architecture is above all things a constructive art; but that this construction must be clothed in the forms that will give the proper character to the building for the purpose it has to fulfil, and to do this we must study the lessons past architecture can teach us, and what we can gather from nature, and when the public properly appreciates what our art does for a nation and for the world, architecture will again come to its throne.

I must not, however, leave out John Addington Symonds' prophecy.

"At first the enthusiasm for antiquity inspired architects and scholars alike with a desire to imitate *per saltum*, and many works of fervid sympathy and pure artistic intuition were produced. In course of time the laws both of language and construction were more accurately studied; invention was superseded by pedantry; after Poliziano and Alberti came Bembo and Palladio. In proportion as architects learned more about Vitrivius, and scholars narrowed their taste to Virgil, the style of both became more cramped and formal. It ceased at last to be possible to express modern ideas freely in the correct Latinity required by cultivated ears, while no room for originality, no scope for poetry of invention remained in the elaborated method of the architects. Neo-Latin literature dwindled away to nothing, and Palladio was followed by the violent reactionaries of the *baroco* mannerism.

In one all-important respect this parallel breaks down. While the labours of the Latinists subserved the simple process of instruction by purifying literary taste and familiarising the modern mind with the masterpieces of the Classic authors, the architects created a new common style for Europe. With all its defects, it is not likely that the Neo-Roman architecture, so profoundly studied by the Italians, and so anxiously refined by their chief masters, will ever wholly cease to be employed. In all cases where a grand and massive edifice, no less suited to purposes of practical utility than imposing by its splendour, is required, this style of building will be found the best. Changes of taste and fashion, local circumstances, and the personal proclivities of modern architects may determine the choice of one type rather than another, among the numerous examples furnished by Italian masters. But it is not possible that either Greek or Gothic should permanently take the place assigned to Neo-Roman architecture in the public buildings of European capitals."

I hope J. A. Symonds' prophecy will not be fulfilled, but not being a prophet myself I cannot speak with certainty, but if his prophecy be true, and architecture cannot progress, it must be swept into the limbo where heraldry, necromancy, astrology, and perpetual motion now moulder in peace.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

A SPECIAL General Meeting of this Institute was held on Monday evening last, at No. 9, Conduit-street, W., Mr. W. M. Fawcett, Vice-President, presiding.

The Chairman moved that, subject to her Majesty's gracious sanction, the Royal Gold Medal for the promotion of architecture be presented to Professor Aitchison, R.A. The motion, having been seconded by Mr. H. L. Florence, Vice-President, was agreed to unanimously.

The meeting then terminated, and the ninth general meeting (business) of the session was held, Mr. W. M. Fawcett, in the chair.

The Chairman announced that the Council had resolved to increase the value of the Owen Jones Studentship from 50*l.* to 100*l.*, and that the holder of the studentship would be required to make a tour extending over six months, such tour to be devoted to the improvement and cultivation of his knowledge of the successful application of colour as a means of architectural expression.

The following candidates for membership were elected by show of hands, namely:—As *Fellows:* G. Lethbridge, London; E. T. Boardman, Norwich. As *Associates:* L. Hobson, Liverpool; W. C. Hulbert, London; J. Ormrod, Bolton; D. C. Maynard, London; T. Honnor, London; H. J. Pearson, F.S.I., London; R. H. Morton, London; H. Shepherd, London; W. McCulloch, St. Andrew's, Fife; J. F. Duthoit, Dover; H. A. Collins, London.

The proceedings then closed.

Portrait of Mr. Penrose.

Mr. J. S. Sargent, R.A., having now completed the portrait of Mr. F. C. Penrose, F.R.S., Past-President, the formal presentation to the Institute has been arranged for the 21st inst. At the same meeting Mr. J. D. Crace will read a paper on "Heraldic Drawing and its Adaptation."

ACETYLENE AND CALCIUM CARBIDE.

SOME six or seven years ago, Mr. Willson, a Canadian experimentalist, discovered accidentally that by heating a mixture of lime and carbon in an electric furnace, calcium carbide could be produced. As usual, other experimentalists were working on similar lines at about the same date, and have claimed priority as to the date of discovery, but it appears beyond dispute that Willson was the first to publish the important announcement. Although Willson was manufacturing the carbide as long ago as the year 1892, it was not until the commencement of the year 1895 that the matter was brought prominently before the British public by Professor Lewes in a lecture at the Society of Arts. Acetylene gas made from calcium carbide and burned through suitable gas-burners was then first publicly exhibited in this country. Glancing over the three years which have since elapsed, we find that this apparently insignificant compound obtained from lime and coke has in three short years given birth to factories in America, on the Continent, and in our own country. From a scientific curiosity it has become a common article of commerce, manufactured, it has been stated, at a rate of something like 20,000 tons per annum. At Foyers, in Scotland, a large installation driven by water power has been manufacturing carbide for some time past, and although this is the only factory at present producing carbide in this country, it is no doubt merely the forerunner of many others. One of the amusing results of the establishment of this new industry has been the fevered rush to the Patent Office of a never-ceasing stream of would-be inventors anxious to be first in the field with acetylene appliances; while a tragic side has been presented by the

efforts to use the gas after it has been liquefied by compression, and which has been the cause of fatal accidents.

Acetylene is being used abroad for public lighting and for driving motor cycles, and as its use is gradually spreading in this country for lighting country residences and for other purposes, a few details as to its commercial utilisation may interest many of our readers who like to be well informed upon all matters connected with artificial lighting. Calcium carbide is sold in small lumps having a crystalline semi-metallic appearance, and *provided it be kept dry* it may be handled and stored in perfect safety ; in fact, it may be held in a gas flame or in a fire, and will not burn or undergo any change. Immediately, however, it is allowed to become damp, or is brought in contact with water, acetylene gas having a peculiar odour is produced, and if ignited will burn with a highly-luminous flame. Like coal gas, it forms a very explosive mixture when mixed with certain proportions of air, and being endothermic the violence of the explosion is greater than with coal gas. The acetylene gas is produced by a chemical reaction taking place between the water and the carbide, and unless the two are brought in contact with one another no acetylene can be formed. But the atmosphere contains enough moisture to cause the re-action to slowly take place when the carbide is exposed in it under ordinary conditions, and, consequently, it is found necessary to store the carbide in air-tight receptacles. In practice, one pound of carbide should produce about 5 cubic ft. of acetylene, and a convenient rate at which to burn the gas for common lighting purposes is about one cubic ft. per hour. At present the price of carbide in large quantities is a little under 20*l.* per ton. When burned at the rate of one cubic ft. per hour through a suitable burner, such as the Naphey burner, the illuminating power of the acetylene will be considerably greater than that of a common burner consuming London coal-gas at the rate of 5 cubic ft. per hour, and the whiteness and brilliancy of the flame is such that it attracts universal admiration. Professor Lewes, in drawing attention to the great importance of using pure materials for the manufacture of carbide, states that, although he has seenspecimens of carbide that contained enough impurity to render them dangerous, such carbide has always been of foreign manufacture. With regard to liquefied and compressed acetylene, it may be well to point out the fact that acetylene in this form is so dangerous that the Home Office has very properly issued stringent regulations respecting it.

MAGAZINES AND REVIEWS.

THE *Architectural Review* (Boston) devotes the illustrations in Vol. V., No. 9,* to several of the competition designs for the National Academy of Design, New York. The selected design, by Messrs. Carrère & Hastings, is hardly one to arouse enthusiasm ; it is a mere "school" design with a rusticated basement and a coupled Ionic order over it, and the front elevation both of that and Mr. Flagg's design has a very weak effect from the manner in which the lower building at each end seems merely tacked on to the central mass, with the same slope of roof repeating that of the centre. The side elevation shows a bad effect in another way, from the ridge of the side roof not being central with that of the block against which it abuts. Mr. Flagg's detail elevation produces a rich effect with a profusion of Roman and Greek detail mixed. The most artistic elevation among those illustrated is, to our mind, that of Messrs. Babb, Cook, & Willard.

The *Art Journal* contains a very well-written short article on David Cox by Mr. James Orrock, who may be expected to write in a sympathetic spirit, and who expresses admirably what is the special quality and interest of Cox's art. In "The Present Condition of Art in Scotland" Mr. Jas. L. Caw takes a rather too laudatory tone ; there are two or three remarkable Scottish painters at the present moment, but we hardly think that the art of Scotland to-day, as a whole, can be said to be "comparable with the best in Europe." Is Mr. Caw a Scotchman ? Mr. Fred Miller continues his series of "Cunning Work for Clever Fingers" *i.e.* lessons in decorative art work for amateurs, dealing in this number with beaten metal-work and *repoussé*.

* One is obliged to describe it thus, as the *Architectural Review* bears no date on any of its issues.

The *Studio* (February 15) has also its Scottish article, on "Some Glasgow Designers," concerned mainly with the stained glass designs of Mr. Oscar Paterson, in which there is a great deal of originality and suggestiveness, though it is rather in the way of odd and picturesque fancies than in the higher walks of stained glass design.

The *Magazine of Art* deals largely with decorative work ; an article on "Swansea Porcelain," by Mr. Cosmo Monkhouse, a historical sketch ; one on "Artistic Metal Work," by Mr. Arthur Vallance ; one on a new sculptured door-way or door-frame by Rodin, which appears to be a really remarkable work, and one on the work of the late woodcarver of Florence, Frullini. The article on the Calderon School of Animal Painting in Baker-street is of interest, and some of the life studies of annimals by the pupils very good.

The Artist contains a portrait of Jean F. Millet, and illustrations and a description of "A House in Surrey," of which Mr. W. Pite is the architect, and which as a specimen of a moderately-sized picturesque house for a picturesque site is worth illustration.

The *Antiquary* commences a new series of illustrated papers by Mr. Geo. Bailey, under the title "Ramblings of an Antiquary," this paper being occupied with some paintings on the walls of St. Peter-at-Raunds, Northamptonshire.

The *Nineteenth Century* contains an article on the Millais Exhibition by Mr. Claude Phillips, which is one of the best, if not the best, of the critical estimates of Millais' work which have appeared since his death.

Harper contains a short article on "The earliest Painter in America," Gustavus Hesselius, who was born in Scotland in 1685, and came to America in 1715. It is curious and unexpected to find from this article that in America nearly two hundred years ago an artist received a commission to paint a large altar piece of the Last Supper, which was duly executed. As Mr. Hay, the author of the article, remarks, "this was the public patronage of art for legitimate purposes nearly two centuries ago, and yet from that time almost up to the present such patronage has been a dead letter" (in the United States we presume is meant), "and no one till now even knew that it had existed here."

In the *Century Magazine* the series of "Old English Masters," with engravings by Cole, deals this month with Richard Wilson, on whom Mr. J. C. Van Dyke writes a short article, which tells sympathetically the rather melancholy story of Wilson's rise into fame and subsequent decline. As a fact, Wilson did not merit all the fame which he had at one time, still less the neglect into which he fell in later life ; but with the exception of Gainsborough he was undoubtedly the best English landscape painter of his time, and he commenced, moreover, before Gainsborough.

In the *Revue Générale*, M. Goffin's article on "Pisa" is continued, but is concerned in this number especially with the frescoes in the Campo Santo. M. Verlant, under the head of "Chronique Artistique," gives an interesting and full critical summary of some recent artistic work in Paris.

Dekorative Kunst devotes a long article to the description and illustration of the work of Mr. Voysey, which is we suppose more especially in sympathy with the special class of art advocated by this new German journal ; otherwise, with all appreciation of the work of Mr. Voysey, we should have thought that there were some other English architects who had a prior claim to special attention.

The Quarry continues its series of articles on "Applied Geology," and gives an account of fuse-firing in mines by electricity. This method has now been introduced at the Festiniog Quarries, and this is stated to be its first use in underground slate quarries of North Wales. It is rather surprising that it should not have been used long before.

THE ORGAN, GLOUCESTER CATHEDRAL.—An appeal is made by Dr. Spence, the Dean, and Mr. A. H. Brewer, the organist, for subscriptions to a sum of 650*l.* for adding a solo organ ; together with some necessary stops to the present instrument, which was rebuilt some years ago by Willis. For the original organ, by Renatus Harris, a screen was erected in 1823 by Dr. Griffith, prebendary ; the organ, by Harris, was enlarged by Bishop seven years later ; it is stated that some of the old stops are preserved.

THE ARCHITECTURAL ASSOCIATION DISCUSSION SECTION:

THE RELATIONSHIP BETWEEN THE ENGINEER AND THE ARCHITECT.

A MEETING of the Discussion Section of the Architectural Association, in conjunction with the Institution of Junior Engineers, was held at the rooms of the Royal Institute of British Architects, 9, Conduit-street, on Wednesday evening, for the purpose of discussing the subject of "The Desirability of a Closer Relationship between the Engineer and the Architect." The chair was occupied by Mr. M. Garbutt (Chairman of the Architectural Association Discussion Section), and he was supported by Mr. H. Bloomfield Vorley, A.I.E.E., Chairman of the Institution of Junior Engineers.

The Chairman, in opening the proceedings, said his first duty was to welcome, in the name of the Discussion Section, Mr. Bloomfield Vorley and his fellow members of the Institution of Junior Engineers. The increasing separation of the various branches of the constructive art, and the tendency of most of its practitioners to become specialists, appeared to be consequences of the increasing range and complexity of modern knowledge, and although in some cases the resulting concentration of individual effort might facilitate the attainment of very high results, yet it imposed limitations that were often detrimental. Many of those engaged in constructive work regretted that such marked divisions should have arisen in an art that was, in its elements, one ; and it was in the hope of assisting—if only slightly—in the task of softening the dividing line between engineering and architecture, that the committee of the Discussion Section sought the co-operation of the Institution of Junior Engineers in arranging that meeting. The Council of the Institution met them in a very gratifying manner, with the result that they were now assembled to discuss the reasons for the desirability of a closer relationship between the engineer and the architect ; and he hoped some hints might also be elicited as to the means whereby the drawbacks of the existing system might be lessened.

Mr. Percy J. Waldram, P.A.S.I., of the Institution of Junior Engineers, read the first paper dealing with the subject from an engineer's standpoint. He remarked that Continental architects were enthusiasts in their work, and they found in the craftsmen they had to employ in the various branches of work men of like enthusiasm with themselves, trained in the excellent Continental technical schools, not only to produce good work in their particular branch, but to design and to aim at high ideals. The architect, if he wished to remain the master designer—and his enthusiasm would be content with no lesser place—must keep pace with them, must study processes of different crafts, and must be able to design in any material and harmoniously group the work of every trade. He was thus led to master every detail which would affect the beauty and harmony of his building, and he did not leave engineering work alone. He was accustomed to meet skilled designers in every other trade, and he demanded and created a supply of skilled engineers with whom he could collaborate, and who were none the less skilful as engineers because they were able to admit that there were other considerations than the cheap production of so many square inches of section for what they believed would be so much stress ; men who were practised in entering into the feeling and *motif* of a general design, and adapting their work to it, without, on the one hand, destroying its own individual identity ; nor, on the other hand, producing shams. The result was far-reaching on both sides. The architect was enabled to take full advantage of the engineer's material —his spans and heights were bolder and nobler, and his work, without becoming flimsy, became strong and graceful as the result of true design in a strong material. The engineer grew accustomed to mould his details without the absolutely unnecessary ugliness which was the result of careless and crude manipulation of intracticable material, and whether he might be designing an iron roof, a column, an engine base, or a gun carriage, his first ideas quickly and intuitively grasped the true and natural form the material should take to attain a desired end, and his design became graceful because it was true adaptation of means to an end, and not necessarily weak or "gim-

cracky," because it had not the solidity of a steam-hammer. Of course, such advance in engineering design was not exclusively Continental, and it also at times induced excesses which were absurd. But nickel-plated piston rods and gilt mouldings on an engine base were no parts of true design, and he thought it would be frankly admitted that we English engineers could find much that was instructive, much that was beautiful, much that was decidedly economical in what might be called the spontaneity with which Continental engineers, under the influence of architects, adapted their material to do its work. In America, the spirit of the engineer seemed to pervade buildings almost to a greater extent than that of the architect. Thus, in Continental and American work, they found not a little that was instructive. They also found engineers and architects working closely together, sometimes from reasons which differed, and they saw both sides deriving benefit therefrom —benefits which might lead to extravagances, but which on the whole were of material as well as of æsthetic value. In England such organised and natural connexion was largely conspicuous by its absence. The architect, as a rule, knew the engineer chiefly as a "painful necessity," who required obstrusive beams and tie-rods which would not harmonise ; the representative of strong and massive ugliness, who would get over difficulties if he was allowed to have his own way, but whose effect on a building was to be dreaded. The engineer's idea of an architect was often, he feared, that of a man who wanted results, and whose client could afford to pay for them ; who could not, or did not, invite competition, and with whom there was no great necessity to take much trouble, nor to make modest estimates. If the architect's buildings or his client's interests suffered from elementary engineering design, and too large a proportion of the cost being spent on engineering work, that was not the engineer's business, and he was too much occupied with the market price of iron and draughtsmen's wages to trouble about the relations of economy many times removed. He (Mr. Waldram) was quite aware that in many instances the old order was changing, and that both architects and engineers were already assimilating the fact that their work overlapped and largely affected that of each other. There were architects who were sufficiently conscientious to consult independent non-commercial engineers in large matters and master small ones for themselves, but that course reduced their fees and encroached upon their time, which meant money. On the other hand, there were engineers who, though left with a practically free hand, would conscientiously endeavour to produce results in the best as well as the most economical manner, and when necessary employ architectural assistance. But that course reduced their profits and encroached on their time, which also meant money. Both sides suffered material loss, and only acquired theoretical gain in doing so. As they had not largely developed a quick artistic sense nor a hair-splitting passion for competition, it must be left to professional honesty to right the system and to acquire the national results which they now lost. Habit was very powerful, and to imagine the busy and established architect and engineer making any change was all but impossible. Improvement must be made a matter of habit, and he would venture to express the opinion that it was the imperative duty of Institutions on both sides, having a proportion of younger members, to do all in their power to extend early and fruitful personal connexions. When their papers and visits were of a mutual interest, then let mutual invitations be sent. When a member, young or old, on either side could introduce work or wished to receive advice or assistance, let him communicate through his secretary to the secretary of the kindred Institution, and a large field of assistance would be open to him. By mutual courtesy and mutual help let the two professions grow together ; both would benefit, and in the future it would be found that improved technical education in England and the far-reaching effects of foreign and home competition would operate in England and her colonies in the same way that it operated now on the Continent and in America, and then the men who had brought their work and knowledge up to the required level, the architects who could speak with the weight of personal general knowledge of the engineering work which their clients' requirements necessitated, would be the men who would be wanted, and the engineer who had learnt to bring his work and designs into touch with that of the architect would be the man whom the architect would entrust his work to. Mr. Waldram proceeded to outline the practical advantages derivable from a closer relationship between the engineer and the architect, remarking that however such ideals as he had drawn might appeal to their present enthusiasm, it was well to recollect that the millennium was not yet reached, and practical advantages must be found before such a system found universal approval. He would therefore suggest that members of these two Institutions, even now in their everyday office experience, frequently found themselves entrusted with, or responsible for, work of an architectural or of an engineering character—which, whatever their ability, was really outside the range of their experience, and which would be better done partially or wholly by a practised designer or a skilful engineer. It would, possibly, not be easy at first to devote even a small fee for such assistance, however valuable ; but there was no doubt whatever that a communication to either of the secretaries would very quickly find a suitable man qualified by experience with the particular kind of design or the particular knowledge required, but who would not be under the disadvantage of feeling compelled to charge a heavy professional fee. Such should soon lead to reciprocity, and if the communications were made through both secretaries, those who were earliest in the movement would be best known to them, and would stand the best and earliest chance of reciprocal work. He would urge engineers (especially professional in contradistinction to commercial men) not to hesitate to seek the collaboration of architects whenever architectural skill was necessary in their work ; for he believed architects would not be slow in return, and he need hardly suggest that architects had the responsible control of a very large field of engineering work, and a still larger field of potential work now left untouched. When the engineer came to actual discussion and communication with an architect over matters of design he might learn much that would be impossible for him to acquire elsewhere. He might be pardoned for supposing that visits to engineering works and papers and discussions thereon would interest architects, and would tend to broaden their ideas of the possibilities of engineering design as applied to buildings.

Mr. Sydney B. Beale, A.R.I.B.A., next read a paper dealing with the subject from the architect's point of view.

Mr. Beale said no doubt could be entertained that there was not a close relation between architects and engineers at present ; the question of the desirability of closer relation required consideration. It was not a promising start to begin by each profession telling the other that it required more culture ; but that was what the position amounted to. Architects admired the ingenuity of engineering constructions, but were annoyed at their want of refinement in design and proportion, while engineers saw a want of purpose and a superfluity in many architectural details. Of course such a thing as a gasometer, for instance, did not admit of agreeable treatment in design, but it was an error of taste and an outrage on the fitness of things to surround it with a series of quasi-architectural columns. Some engineering productions, however, were susceptible of pleasing treatment, but the ornament took the form of cast-iron rosettes and coats of paint. Then, any man who had attainments of a particular kind was apt to look down on others who had not the same kind of knowledge, and thus arose a misunderstanding of each other's principles and aims. These were the difficulties to be overcome ; they were great, though they had grown from small beginnings. The temples of Greece, the aqueducts of Rome, the domes of the early Christians, represented art combined with the best construction of the day. As time passed on ultra-utilitarianism on one side, and dilettantism on the other side, had separated designers into two classes, and the requirements of the age and the conditions of life did not now permit of the existence of the scientific skill of a great engineer and the artistic power of a great architect being united in one person. But he would show some reasons for a closer relationship between them.

"Consider for a moment the subject of constructional ironwork now so largely used in architectural design. This is clearly the engineer's side. From the earliest introduction of cast iron to the latest adaptation of steel, architects have known, and still know, little of these materials ; they have not been the designers of the work executed in these materials, although it forms such a vital part of their buildings. Merchants, middlemen, and quasi-engineers have come to the rescue. They are prepared to design the scheme, supply the material, and construct the work without payment in fees—that is, as fees—all on a system which is possibly expeditious and convenient to the architect, but not affording him the best means of safeguarding the client's interests. He is not familiar with the details of iron construction or the strength of the parts, but any doubts he may have are set at rest by the fact that he is justified in assuming that the designer of the constructional ironwork who also supplies the material will not employ in his calculations a factor of safety too low. This is not quite satisfactory. At best the position is an undignified one for the architect, being, as he is, in the hands of the dealer in iron. How can the system be altered? Can the architect design his own ironwork? I think not. From some personal experience in the study of the theory of iron construction, and from acquaintance with the practice in some offices in which a considerable amount of constructive ironwork is designed, I have come to the conclusion that time and circumstances do not permit the architect to become sufficiently expert in ironwork to lay out the scheme of joists, girders, columns, roof principals, &c., to calculate the strains, dispose the material, and produce drawings of the parts in such detail that there remains only the cost to estimate and its execution. I do not arrive at this conclusion with any sense of misgiving or apology for the profession, because I hold that it is quite impossible for a man to reach his full height as an architect, which is his duty, and at the same time to be so much of an engineer as to be expert in the design of constructional ironwork. Now, what I wish to suggest, among other points for consideration, is the possibility of engineers being of more use to architects in this matter than they hitherto have been. If there was a closer relationship between the professions, why should not an architect look to an engineer for reliable advice and design in ironwork in his every day practice? This course is followed in some instances of modern theatre building, and they are exceptional, but there is a vast amount of ironwork construction in the hands of architects which does not call for the skill of a Sir Benjamin Baker or a Max am Ende, but which could be dealt with by an engineer on a lower plane of eminence.

We are but discussing principles ; it is, therefore, not necessary to enlarge on the details of an arrangement by which the general body of architects and engineers might co-operate in this matter, but I will say this, and I say it in all seriousness, that I know the disinterestedness of many true architects is such that they would gladly place whatever artistic skill they may possess at the disposal of a friendly engineer, and at the same time would not expect to be furnished in return with scientific help involving much labour without a proper recompense.

This is no Utopian idea incapable of realisation. It has had a tentative trial in the comparatively recent action of the Royal Institute of British Architects in reference to the proposed new bridge at Vauxhall. A design for the bridge as an architect would like to see it was prepared in the name of the Institute, and placed at the disposal of the Engineering Department of the County Council. It was not expected that this architects' design would be closely followed by the responsible engineer ; there is no close relationship between us as in the days when we were one and the same person. We do not fully grasp each other's aims ; we have been estranged so long. The Institute action has, however, made itself felt. The County Council and its advisers have since inspected some of the fine bridges of continental fame. We may, therefore, imagine it has been realised that there is more in good bridge design than merely spanning the space.

Some strong reasons for more co-operation have been considered in relation to the design of constructional ironwork. The same process of reasoning is applicable to such branches of engineering as electric lighting, exceptional heating, ventilation, and sanitary work ; in fact, all classes of work in which the present adviser

of the architect is a tradesman first and an expert afterwards.

There remains to be considered what will be the practical outcome, the developed result of a closer relationship between the engineer and architect, if such co-operation and mutual help as I have endeavoured to describe should grow out of this discussion of the subject. I dismiss at once, as unworthy and unlikely, any reflection that engineers gaining architectural knowledge, or architects gaining engineering skill, would be tempted to practise in each other's legitimate domain. But the question which cannot be so summarily dealt with is: given a closer union, will there be a predominating influence, and, if any, which will it be?

The principal modern example embodying on a large scale the joint work of the engineer and architect is the Tower Bridge, but there is no union of ideas, no singleness of purpose, no coalition. They have not understood each other. There is a strong influence of cast-iron in the design of the masonry towers, but this is not quite the characteristic that should result from the co-operation of an artist in building with a scientific constructor.

This is one of the early failures. There will be improvement. Very few architects at present understand the principles which guide an engineer in his design, fewer engineers appreciate the considerations which affect an architect in matters of planning composition, mass, detail, colour, and ornament. It is, therefore, in the interest of the general community, in the interest of the beauty of great cities, and in the interest of engineers and architects themselves, that it is desirable there should be a closer relationship between them, a relationship based on a closer knowledge of each other's work, on a deeper sympathy with each other's aims, producing, from the interchange of ideas, a result that shall bear the impress of the chastened influence of both professions."

Mr. E. A. Berry opened the discussion which followed. Reference had, he said, been made to the absence of beauty from the engineer's work. But what could be expected when the poor engineer was tied down to 500*l.* for work which should by right bring him 5,000*l.*? Granting that the engineer had not given sufficient attention to appearances, was it not a fact that the architect had been too zealous in that direction? He referred more particularly to domestic buildings. Usually a tremendous amount of work was put into the elevation of these; but in the interior they would find a cramped staircase and a hall so narrow that a man could not take his coat off with comfort. Generally speaking, there was room for a better understanding between the two professions, and he regarded it as a happy augury that the juniors, who were as yet free from the obstinacy which characterised their seniors in the profession, should be able to lead the way in bringing into practice what was so often preached.

Mr. H. V. Lanchester said it was more than possible that the inconveniently-designed houses of which Mr. Berry spoke were not from the designs of architects at all, but were the work of the speculative builder. He cordially agreed with the suggestion that with regard to constructional work and the other phases of special work—heating, for instance—the architect should act in concert with the engineer.

Mr. A. W. Marshall said he was afraid the architect was too prone to regard himself as supreme. In planning large buildings, too, he usually paid little heed to the requirements of the engineer, with the result that the latter often came out very badly. Architects, he thought, should always consult the engineers upon the disposition of the internal space of large buildings. Often the engineer was left, in the absence of a good understanding with the architect, to put down electric light installations and mains and pipes in the best way he possibly could. It was a very common thing, also, for architects to allow too small a margin in the matter of price for the engineering. There was no doubt that their work had very much in common, and he rejoiced to know that there was a prospect of a better understanding.

Mr. C. H. Brodie said it was once an axiom that every Englishman could do two things—drive a gig and play cricket. He was inclined to add that nowadays there seemed a third quality—that every Englishman could design, or thought he could. The grievances architects felt against engineers for undertaking purely architectural work applied with equal force to some other professions. For himself, he thought the consulting engineer could be of the greatest benefit to the architect in obtaining the best results in his work. Architects were excusably sore that civil and mechanical engineers who sought and obtained posts as surveyors to public bodies should undertake to design everything—from a clock tower to a bridge over a river. He ventured to suggest that one result of this was the advertisement so often appearing: "Wanted, an architectural assistant.—Apply to the Borough Surveyor." Of course, Mr. Waldram would justify the custom by pointing out that architectural assistance was obtained. Yes, he (Mr. Brodie) knew that it was so—at 30*s.* per week.

Mr. B. H. Joy, as a marine engineer, said it was only in recent years that the marine engineer and the naval architect had been drawn so closely together as they were at present, and their relationship served as a useful parallel to the engineer and the architect. Not many years since the naval architect designed ships, and the various officers came along and arranged for the space that should be allotted to them; with the result that it was not unusual at the completion of the design that little or no room was left for coal bunkers and engines. All these difficulties and dangers had been overcome by a closer alliance between the naval engineer and the naval architect.

Mr. Owen Fleming remarked that many of them regarded the discussion section of the Association as the pioneer section in which all their hopes for the future were laid. The discussion that night was an evidence that the movement for closer relationship was growing slowly but surely. There was a belief that, whether in the building of bridges, cathedrals, asylums, or what not, the engineer and the architect could in closer relationship better perform the work entrusted to them. The reason was not far to seek. The architect on his part could not but feel that the engineer was absolutely honest—honest in the sense that his work was coherent and expressive. He could not observe, for instance, a railway locomotive or an ironclad without feeling that the engineer was no jerry-builder.

Mr. J. G. Read said the two papers were full of suggestions, but neither gentleman attempted to define the functions of the engineer and the architect. He himself understood a little about the functions of the engineer, but he could not define those of the architect. The engineer was the man who devoted his time and powers to the development and the utilisation of the great powers of nature for the service of man. Having said so much, he should like to suggest that the engineer and the architect were one and the same thing. The work of the engineer depended upon scientific knowledge, not available in the times of the ancient Greeks and the Romans.

Mr. H. H. Statham said his complaint against the engineer was that he did not know what the architect wanted, while the architect knew exactly what the engineer required. He quite agreed that the engineer should act according to scientific principles; but why should he resort to unnecessary ornamentation which was supposed to be architectural, but was not? The Tower Bridge was not, he thought, quite a successful example of the co-operation of the engineer and the architect. Indeed, he regarded the bridge as one of the most objectionable structures now existing in London. The Forth Bridge, as a gigantic, magnificent specimen of engineering structure only, was, however, something they all could admire.

Mr. H. W. Pratt remarked that, although there were unfortunate examples of the co-operation of engineer and architect, he saw no reason, on looking closely at things, why there should not be an improvement. The difficulty was that the engineer and the architect looked at things from such a different point of view. So long as that occurred, co-operation would be slow in coming. But he was quite certain that architects could not get on in important works without the consulting engineer, and the engineer, on the other hand, had so much to do with constructional work that they could not get on without the architect. No doubt such discussions as these was to their mutual advantage in removing the difficulties.

Mr. H. Bloomfield Vorley, replying to Mr. Statham's criticism of engineering ornamentation, said he could not help thinking that the engineer was at a disadvantage in not having studied archæology, with which the architect was well acquainted. At the same time the engineer was, in these days, perfectly at sea, owing to the uncertainties and inconsistencies in the architect's styles of ornamentation and design.

The Chairman said it was impossible to expect that the high attainments of the two professions could be combined in one man, yet at the same time he felt that it would be an advantage for members of either profession to equip themselves with a general knowledge. The average architectural student was practically educated in a specialist's school. Was it not possible, as well as extremely desirable, for the students in either profession to become acquainted with some of each other's work?

Votes of thanks were accorded to the readers of the papers, to the Royal Institute of British Architects for placing the room at the disposal of the Discussion Section for the meeting, and to the Chairman for presiding at the proceedings.

ARCHITECTURAL SOCIETIES.

MANCHESTER SOCIETY OF ARCHITECTS.—At a meeting of this Society held on the 1st inst., at the Standard-chambers, King-street—Mr. John Ely in the chair—Mr. J. H. Reynolds, director and secretary of the Manchester Municipal Technical School, read a paper on "Technical School Buildings." He said that in the construction of the Manchester Corporation Technical School in Sackville-street advantage had been taken as far as possible of the experience gained in the erection of similar buildings elsewhere, and that in consequence there were many matters of professional and technical interest connected with it. It was, however, to be borne in mind that schools differed so much in aim, resources, scope, site, and other circumstances, that one rarely found the methods adopted in one place just those best suited to the conditions and requirements of another. As an illustration of this he pointed to the absolute necessity of providing for the greatest possible amount of light in buildings situated in a city like Manchester, which, by reason of the narrow streets and the pall of smoke which overhangs it, enjoys but little of the blessed light of the sun. The question of fenestration assumed vital importance under such conditions, and virtually determined the style of architecture, or at any rate limited the range of choice. From this point of view the Gothic style, as exemplified in the Town Hall or in Owens College, was to be condemned. So, too, was a style of architecture which required for its best effects heavy projections and consequent deep and widely-extended shadows, or, again, a style which demanded small windows for the sake of gaining picturesque or quaint results. He knew that architects delighted in the sense of repose which was derived from large blank wall space as a relief from window openings and other distracting features of the elevation of a building, but that it was possible to make a satisfactory compromise between the demand for light and architectural conventions was seen in the fine building of the Williams Deacon and Manchester and Salford Bank in Mosley-street, and in the warehouse recently erected by the Tootal Broadhurst Lee Company in Oxford-street. It might be granted, nay required, that we should make our public buildings characteristic, beautiful, and impressive to the eye of the passer-by, but these things should be attainable without any sacrifice of utility. Mr. Reynolds proceeded to offer various suggestions as to the means by which beauty and utility may be obtained in our technical school buildings. His paper was illustrated by a number of limelight views. On the motion of Mr. Edward Salomons, seconded by Mr. J. H. Woodhouse, a vote of thanks was accorded to Mr. Reynolds for his paper.

EDINBURGH ARCHITECTURAL SOCIETY.—The Edinburgh Architectural Society met on the 2nd inst. in Dowell's Rooms—the President, Mr. W. Nicholson Cumming, in the chair—when Mr. A. Hunter Crawford, representing the Edinburgh Architectural Association, delivered a lecture on "Steam-heating." The lecturer adopted the plan of discussing the solution of an actual problem before his audience, illustrating the subject by sketches and a working model, showing a combined method of steam-heating and domestic hot-water supply.

BIRMINGHAM ARCHITECTURAL ASSOCIATION.—A meeting of the members of the Birmingham Architectural Association was held on the 4th inst., at Queen's College, Paradise-street,

when an address was delivered by Professor Aitchison, R.A. The President of the Association (Mr. C. E. Bateman) presided. Professor Aitchison, in the course of his address, said the first thing any one who desired to become an architect should be sure of was that he had a natural gift for the work, and if he found that he had no taste for it, and that he had been mistaken in the passion, he should get his living in something else. The profession of an architect was by no means a moneymaking profession, and if a person found he could not devote himself with all the energy he possessed to the study of architecture he might surely do something better than spoil the look of the face of his own country. Architecture was pre-eminently a constructional art, and consequently it was of the utmost importance that any man who wanted to become an architect should make himself sufficiently acquainted with the subject, so that he could build with satisfaction to himself and to those who used the edifice. The science of construction was statics, and it was necessary that every man who professed to be an architect should learn sufficiently of statics to be able to gauge the security of walls against the pressure of wind, water, and earth, and even against the pressure of goods, stowed against them, that had an inclination to slide. He must know the pressure that was exercised by vaults, domes, and arches, and learn how those might be properly abutted, as well as understand how to prevent walls, piers, and columns becoming forced out of the vertical. Besides statics, they had to learn the force and strength of the different materials that were used. Unless a man knew the outlines of construction, he could hardly be called an architect, although he might be an admirable designer and planner. In planning it was important that each room, passage, and staircase should be as well adapted as possible to the uses to which it was to be put. The whole should be packed into as convenient a place as possible, so that there might be no lost room, and the most-frequented apartments should be conveniently situated. All public buildings should be well planned and striking or impressive to look upon. Architecture was the accretion of knowledge from the very earliest pre-historic time when any kind of building was put up. The great thing a man who could plan and construct ought to know was how to make the necessary portions of the building he was putting up tell the tale they were required to tell. He was sorry to say that a great deal too little attention was paid to that matter in England, for they saw all kinds of incongruous ornaments and decorations put on all sorts of places. It was probably ten times more difficult to get a thing to look well that was simple, than if it was ornamented. Great ornateness was a mistake, for it was never equal to the perfection that could be obtained by the greatest possible simplicity. He referred at some length to classic architecture, and said that in every architectural epoch of importance the world had known, some buildings were erected that had been the admiration of succeeding generations, and now all persons of culture and wealth would as soon think of being ignorant of the great writers of their own countries as not to have seen Rome, Athens, Italy, and Florence. He did not know we were very much inferior in Gothic days in our works to the French, but he was afraid in his time there had not been so many great buildings put up that would bring persons to see them from all parts of the world. One of the things that to a great extent seemed to be forgotten was that architecture was a constructive art, and sufficient pains were not taken to see how the elegancies of proportion and the beauties of form could be added to our buildings. Those who felt they had divine genius for architecture should use that precious gift properly, and let no labour and no difficulty overcome their desire to make themselves skilful, and to confer such an inestimable boon on their country as to be able to raise buildings which would attract people from all parts of the world. On the motion of Mr. W. Hale, seconded by Mr. W. Henman, a vote of thanks was accorded Professor Aitchison for his address.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.—A meeting of the members of this Society was held on the 7th inst. in the Institute, Cookridge-street, Leeds, for the election of officers for the ensuing session, commencing on May 1. Mr. George Corson (President of the Society) occupied the chair. The following gentlemen were nominated by the council to the various offices:—President, Mr. George Corson; vice-presidents, Mr. John Tweedale and Mr. T. Butler Wilson; hon. treasurer, Mr. W. H. Thorp; hon. librarian, Mr. W. H. Beevers; hon. secretary, Mr. F. W. Bedford; members of council, Messrs. W. S. Braithwaite, W. A. Hobson, G. Atkinson, A. France, C. B. Howdill, and A. E. Kirk; auditors, Messrs. H. S. Chorley and W. Pott. On the motion of Mr. J. W. Child, seconded by Mr. Sydney Kitson, the recommendations of the council were approved.

EXETER ARCHITECTURAL ASSOCIATION. — Bishop Kestell-Cornish, formerly Bishop of Madagasar, presided on the 4th inst. at a meeting of the Exeter Diocesan Architectural and Archæological Society, when a paper was read by Canon Edmonds on the length of the Norman nave of Exeter Cathedral. The author said that Dr. Oliver, who had left them much valuable information, was of opinion that the original Norman part of the Cathedral stopped at the north porch, and that Grandisson added further pillars westward. There were proofs of Norman work in the nave. A document of 1283 showed that Grandisson built the Chapel of St. Ragisund in the north side of the big west door, and in order to do so, had knocked down the original Norman wall. From the various proofs they had, Canon Edmonds contended that the present nave of the Cathedral was precisely the length of the original Norman building.

SHEFFIELD SOCIETY OF ARCHITECTS AND SURVEYORS.—The monthly meeting of members of this Society was held on Tuesday, the 8th inst., at the School of Art, Arundel-street, when the chair was occupied by the President, Mr. R. W. Fowler, F.S.I. A lecture was delivered by Mr. Charles Castle, of Sheffield, one of the lay members of the Society, on "Timber for Construction and Decoration." He outlined some of the many vicissitudes through which timber trees pass from birth to maturity, and explained how environment almost changed the species; and that even in an individual tree, if grown in an exposed position, the side facing N.E. produced different wood in grain, toughness, and texture from the side facing S.W. Mr. Castle rapidly passed in review some of the ordinary woods of commerce, such as spruce, pitch pine, yellow pine, red pine, &c.; then teak, Kauri, Oregon pine, mahogany, oak and canary wood, pointing out their various characteristics, and showing in detail many interesting facts in relation to them. Some good specimens of the combination of various woods for decorative purposes were then shown, including yellow pine panels and pencil cedar mouldings, teak and black wood mouldings, black wood and purple wood mouldings, Kauri and mahogany ditto, mahogany panels and canary wood mouldings stained black, Padouk and black wood mouldings, Cuba mahogany panels and walnut mouldings, satinwood panels and purple wood mouldings, fumigated oak panels and brown oak mouldings, Cuba mahogany panels and sycamore mouldings, stained black, canary wood stained walnut or mahogany. The lecturer said that teak was one of the most reliable and beautiful of woods. It had the advantage of standing artificial drying without casting, and it was most durable. Vessels built of teak nearly a century ago were afloat to-day in good condition. A plain varnished railway carriage of teak was instanced as an example of the beauty of this wood. Kauri was a wood also much praised for its beauty by Mr. Castle, who said that its natural colour was like plain satin wood, and used in decoration it would alternate with any darker wood. It was strongly recommended for first-class floorings, staircases, hand-rails, and shop fronts. The various kinds of mahogany were referred to, and samples shown. The immense increase in the importation of African mahogany was noted. The amount of 200 tons in 1886 had increased to the enormous extent of 40,000 tons in 1897. Some interesting facts about English and foreign oak, and various less important woods, concluded the lecture.

INDUSTRIAL ASSURANCE. — In the forty-ninth annual report of the Prudential Assurance Company it is stated that in the Industrial Branch the surplus shown, after deducting the 50,000*l.* set aside as a Jubilee bonus to the staff last year, is 820,162*l.*, including the sum of 390,660*l.* brought forward last year. The Board have added a sum of 100,000*l.* to the reserve fund, which now stands at 600,000*l.*, and will leave the sum of 397,356*l.* to be carried forward.

DRAWINGS FOR THE ROYAL ACADEMY.

As usual, we shall be glad to receive and deliver at the Royal Academy all drawings intended for the Architectural Room which are sent to us in time to be photographed for publication before sending in.

The last day for receiving drawings at the Academy is Monday, March 28, and we can receive none at this office later than 12 noon on Saturday, March 26.

Every drawing must have *two* labels giving the title of the work and the name and address of the author, one affixed to the back of the drawing, and the other attached by a string so as to hang over in front of the drawing, and must be accompanied by a letter to the Secretary of the Royal Academy, giving also the title of the work and the name and address of the author. If more works than one are sent they must be numbered, and referred to by the corresponding numbers in the letter to the Secretary.

Gilt frames *only* are admissible at the Royal Academy.

We cannot provide labels for drawings which are sent without them.

Illustrations.

ILLUSTRATIONS OF RENAISSANCE ARCHITECTURE.

ALL our illustrations this week are devoted to various examples of Renaissance architecture, given in connexion with Professor Aitchison's Royal Academy Lectures, of which the sixth and concluding one is published in the present issue.

CORTILE, PALAZZO SPADA, ROME.

The illustration shows a portion of the façade towards the interior court of the palace, which is situated in the environs of Rome, about two miles beyond the Ponte Salaro over the Anio. It is a fine example of rich and contrasted architectural treatment, the plain and massive character of the arcade in the ground story increasing the effect of the richly treated upper story and the frieze and cornice above. It will be noticed how admirably the festoon decoration in the middle stage of the design is contrived so as to bind together and give unity to the whole, connecting the windows and filling up the space between them.

MANZONI PALACE, VENICE.

This is an example, less hackneyed by illustration than some other of the Venetian palace, of the Renaissance of the fifteenth century. Here again we see the value of contrast of architectural treatment, in this case not in horizontal but in vertical stages; the two wings, with their rather massive treatment, with large spaces of wall and pilasters at the angles, enclosing and buttressing the lighter treatment of the central portion.

SAN ZACCARIA, VENICE.

The west front of this interesting church, designed by Lombardo, though somewhat later than the remaining portion, and representing early sixteenth century work, is still a remarkable example of the treatment of Classic detail in a Gothic spirit. The curved cornices remind one of Spalato, and seem as if forming a link between Classic and mediæval architecture in the same kind of manner only in the reverse order of things; Spalato representing the first melting down of Classic severity into mediæval freedom, while San Zaccaria represents the struggle of the mediæval spirit against the inroads of revived Classic.

In this design again we have to notice the happy effect of contrasted treatment of the different stages of the design—the panelled basement, with its square lines, the flat treatment of the pilastered arcade over it, and the columns in the upper stories.

The church is referred to at some length in Professor Aitchison's second lecture, printed in our issue of February 12 (see pages 148, 149).

VILLA MEDICI, ROME.

The illustration shows a part of the garden front of the Villa Medici, referred to in Professor Aitchison's sixth lecture, on another page. The Villa Medici has been the home of the French Academy of Art at Rome since the time of Louis XIV.

CORTILE, PALAZZO MARINO, MILAN.

This, which is now the Municipal building

of Milan, was built in the middle of the sixteenth century. The illustration shows a view of the interior courtyard which was so remarkable a feature in many of the Renaissance Italian villas and palaces. Here again we have the contrast between the plain ground story and the enriched upper story; it may be questioned, however, whether the ground floor columns are not too light in appearance for the superstructure, though the manner in which the coupled columns are made to balance the wide piers above is a very pretty and effective arrangement.

EXAMPLES OF RENAISSANCE MONUMENTS.

These illustrations are reproduced, a little enlarged, from the lantern slides used by Professor Aitchison at his fourth Royal Academy lecture. Though the illustrations are small and do not show detail, there is some interest in grouping the designs together, so as to compare their various characters and the ideas shown in them. Nearly all of them were referred to and criticised at some length by Professor Aitchison in his fourth lecture, which is printed in our issue of February 26. It was impossible to give them in the same number as the lecture, as we could not have the slides in our possession in time for that.

ENGINEERING SOCIETIES.

SOCIETY OF ENGINEERS.—At a meeting of this Society, held on the 7th inst., Mr. W. Worby Beaumont, President, in the chair, a paper was read by Mr. William Fox, M.Inst. C.E., entitled, "Reservoir Embankments: with Suggestions for Avoiding and Remedying Failures." The author first made some general remarks on the subject, and then described some instances where difficulties had arisen, and the means adopted to overcome them. He then described the depth and form of the foundations for the puddle trench, showing how springs might be dealt with by means of vertical pipes. He referred to the width of the trench when to be refilled with concrete or puddle, and gave the proportions in both lime and cement concrete. The author then gave his experience with reference to the material used and mode of construction of the embankment; particulars of the width of the puddle wall; the distribution of material on each side, and width of the top; the desirability of the construction of stone or burned ballast toes under certain conditions; the mode of working the clay and of forming the layers of the embankment, and the protection of the inner slope from the wash of the waves. In connexion with the Den of Ogil reservoir, the author described the way in which a leak through the concrete was traced and repaired. The Dowdeswell reservoir embankment, which was made to a great extent of clay, was provided with burned ballast toes to within 20 ft. of top-bank level, which had the desired effect of preventing any slipping. The Monkswood reservoir was also made of very treacherous material, and to prevent slipping, rubble stone toes were adopted. This had the desired effect to a certain extent, but it was found necessary to use more rubble stone than originally intended, and to flatten the outside slope. These precautions were taken immediately signs of a slip became visible, and successfully prevented any further movement.

THE ARCHITECTS' BENEVOLENT SOCIETY.

THE annual general meeting of the subscribers and donors of this Society was held in the rooms of the Royal Institute of British Architects, No. 9, Conduit-street, W., Mr. George Scamell, in the absence of Professor Aitchison, R.A., President, presiding.

The minutes of the last meeting having been read and confirmed, the following report was read by Mr. Percivall Currey, hon. secretary, and adopted:—

"The Council of the Architects' Benevolent Society, in presenting their annual report, have much pleasure in recording the fact that the progress in the Society's affairs during the past few years has been maintained in the year under notice. In view of the many calls upon the means of private individuals during the past year, the Council did not think it advisable that any special appeal on behalf of the Society should be made to the architectural profession; nevertheless, they have the satisfaction to report that many liberal donations have been received by the Society, and that several new names have been added to the list of subscribers.

Although the Society now possess 300 annual subscribers, the Council feel that this number is not sufficiently representative of the large body of architects practising in the United Kingdom; they are assured that there must be a large number of architects, not subscribers to the Society, who would be desirous of helping their less fortunate brethren, or their widows and children who have been left insufficiently provided for. The usefulness of the Society would be increased in proportion to the augmentation of its list of subscribers; and the Council would remind those who have not contributed to the funds of the Society that an annual subscriber of one guinea has the privilege of recommending two applicants for grants during the year, and that relief is always afforded to worthy and properly accredited applicants when there are funds available for the purpose. It is earnestly wished that the list of annual subscribers should be increased, and members of the Society might materially help in effecting this object by bringing its aims and work under the notice of their brother architects.

The amount received in annual subscriptions during the year was 456*l.* 10s., as against 453*l.* 8s. in 1896. Four members have withdrawn, and twelve members were in arrear with their subscr'ptions when the books were closed for the year; and the following gentlemen have recently become annual subscribers:—Sir Benjamin Baker, Messrs. J. Wallis Chapman, Charles Henman, Delissa Joseph, C. W. Lovett, E. W. Mountford, Alfred Williams, Latham A. Withall, and Alfred B. Yeates.

The capital account has been increased by the bequests of 100*l.* each of Mr. David Mocatta and Mrs. Ann Mocatta, and by the following donations:—The Merchant Taylors' Company 21*l.*, John o'Gaunt Sketching Club 15*l.* 1s. 7d., Mrs. C. E. Barlow 12*l.*, Mr. Wm. Emerson 6*l.* 13s. (thus bringing the total amount of his donations to 100*l.*), the Nottingham Architectural Society 5*l.* 5s. The following gentlemen have each made a donation of five guineas:—Mr. J. T. Christopher, Mr. G. Elkington, Mr. George Inskipp, Mr. C. Henman, Mr. E. W. Mountford, Mr. W. Hilton Nash, Mr. J. Tavenor Perry; and various smaller sums have also been gratefully received.

At the beginning of the year there was a balance of 64*l.* 10s. 2d. to the credit of the capital account, and the amount of bequests and donations received during the year came to 300*l.* 17s. 7d. It was therefore decided to increase the Society's investments by the purchase of 200*l.* Caledonian Railway Four per Cent. Debenture stock, and the purchase was effected at a cost of 311*l.*, thus leaving a balance to the credit of this account of 54*l.* 7s. 9d.

A larger number of applications for assistance than usual were made to the Society, and considered by the Council. After proper investigation in each case the sum of 607*l.* 1s. (as against 569*l.* 10s. in 1896) was distributed amongst forty-three applicants; and 70*l.* was paid to the Society's three pensioners.

As the exertions of successive Councils for many years have succeeded in bringing the amount of the invested capital up to 10,000*l.*, your present Council consider that the Society might now increase its present list of three pensions of not less than 15*l.* a year each to six pensions of not less than 20*l.* a year each. The approval of this step would, the Council think, add to the happiness of deserving applicants by the knowledge that they were to receive annually a certain sum. A motion to alter By-law No. 65, so that the above proposal may be carried into effect, will, therefore, be submitted to you. . . .

The Council have to record with deep regret the death during the year of Mr. W. J. Gardiner, Mr. Octavius Hansard, Mr. John Hudson, Mr. M. B. Teulon, Mrs. H. G. Mason, Mr. Stephen Salter, Mr. C. J. Shoppee, Mr. J. Loughborough Pearson, R.A., and Mr. Thomas Wells, all contributors to the Society. . . .

The following gentlemen, being the five senior members, retire by rotation from the Council:—Mr. William Kidner, Mr. George Scamell, Mr. Zeph King, Mr. George Inskipp, and Colonel Robert W. Edis. To fill the vacancies caused by these retirements, the Council have the pleasure to nominate Mr. E. W. Mountford, Mr. R. St. A. Roumieu, Mr. Wm. Woodward, Mr. E. B. I'Anson, and Mr. E. H. Martineau. . . .

The Council, in closing their report, desire to express the indebtedness of the Society to the Royal Institute of British Architects for the use of rooms in which to hold their meetings, and to the officers for their always helpful courtesy."

The statement of accounts and balance-sheet was also read by Mr. Currey, and adopted.

The Chairman said that it was very desirable to obtain additional subscribers, and seeing that there were 2,000 members of the Institute and only 300 subscribers to the funds of the Society, it ought not to be difficult to do so. It was very gratifying to find that they had been able to increase the investments of the Society.

On the motion of Mr. H. Hall, seconded by Mr. J. T. Christopher, a vote of thanks was accorded to Messrs. Wm. Kidner, G. Scamell, Z. King, G. Inskipp, and Colonel Edis, the outgoing members of Council.

On the motion of Colonel Edis, seconded by Mr. H. H. Collins, it was agreed that the following gentlemen be elected on the Council for the ensuing year of office: President, the President of the Royal Institute of British Architects; Messrs. A. Crow, E. A. Gruning, G. T. Hine, Arthur Cates, Aston Webb, H. L. Florence, J. T. Christopher, Sydney Smirke, W. Grellier, E. W. Mountford, R. St. A. Roumieu, Wm. Woodward, E. B. I'Anson, and E. H. Martineau.

Votes of thanks, to Mr. W. Hilton Nash, the hon. treasurer, and Mr. Percivall Currey, the hon. secretary, were also agreed to, and each gentleman was re-elected for the ensuing year as hon. treasurer and hon. secretary respectively.

On the motion of Mr. Currey, seconded by Mr. Hall, a vote of thanks was accorded to Messrs. T. Rickman and R. St. Aubyn Roumieu, the auditors; and Messrs. C. Forster Hayward and G. Lethbridge were then elected as auditors for the ensuing year.

Mr. Christopher next proposed, and Mr. Currey seconded, that the words "Six pensions of not less than 20*l.* each" take the place of "Three pensions of not less than 15*l.* each" in By-law No. 65.

After some discussion, this was agreed to unanimously, and Mr. Forster Hayward expressed his willingness to double his subscription in the hope that others might do the same, and so increase the funds of the Society.

Mr. Rickman proposed, and Mr. Currey seconded, an alteration in By-law 6, viz., to insert after the words, "or more," the following: "or an annual subscriber of two guineas or more." After discussion, this was agreed to by a small majority. It was stated that the alteration would have to come up for confirmation at a subsequent meeting, when, if necessary, further discussion could take place on the subject.

On the motion of Mr. H. L. Florence, seconded by Mr. Wimperis, a vote of thanks was passed to the Institute for the use of their rooms and for office accommodation.

Mr. Collins then proposed a vote of condolence to the family of the late Mr. J. Edmeston, a donor and subscriber to the funds of the Society, whose death had just occurred. The Chairman seconded the motion, which was agreed to.

A vote of thanks to the Chairman brought the proceedings to a close.

THE SANITARY INSPECTORS' ASSOCIATION.

AT the March meeting of this Association, held at Carpenters' Hall on Saturday last, a paper was read on "The Inspection of Dairy Farms," by Mr. Skinner, of Brighton; Mr. G. T. Dee, Chairman of Council, presided. Before the reading of the paper, reference was made to a correspondence on the subject of the proposed appointment of an inspector at Battersea at a salary of 101*l.* a year, and of another at Hackney at 104*l.* a year. The Council of the Association communicated with the Local Government Board and the London County Council, praying that the necessary sanctions should be withheld in the case of appointments at salaries so inadequate. The London County Council had since had the matter under consideration, an opinion being expressed which accorded with that of the Association, but representing that it was a matter which rested with the Local Government Board and not with the London County Council, which, however, was justified in expressing an opinion because it would be called upon to pay a portion of the salaries.

The lecturer pointed out that the Infectious Diseases Prevention Act (1890) gave certain remedial powers in the London districts, but those powers could only be exercised in other districts after the adoption of the Act by the local authority concerned; and its adoption being optional, instead of compulsory, this salutary legislation was in too many districts inoperative. In making an inspection of a dairy farm, the water supply, the construction of cowhouses and milk stores, and the paving, drainage, lighting, and ventilation were among the chief points to be considered. While at some dairy farms the water supply was all that could be desired, there were others, particularly those of the smaller class, of which that could not be said. The water in many was obtained from shallow wells, insufficiently protected from pollution by surface washings, and sometimes the only available source of supply was

water collected in shallow roadside pits, while in other cases water was taken from the nearest running stream. The present cowsheds were generally low-pitched, ill-paved, badly drained, and badly lighted and ventilated. Light was most essential, and it had been decided that there should be an allowance of free air-space of at least 800 cubic feet for each cow accommodated.

THE SURVEYORS' INSTITUTION.

AN ordinary fortnightly meeting of this Institution was held on Monday, in the temporary premises of the Institution, Savoy-street, Victoria-embankment, Mr. T. M. Rickman, Vice-President, in the chair.

The minutes of the last meeting having been read and confirmed, Mr. William Irvine, Bengal Civil Service (retired), read a paper on "Land Survey and Valuation in Northern India."

In the course of his paper, the lecturer dealt with the system of field survey and the valuation of land, both for purposes of taxation and for the fixing of tenant rents, and after some historical remarks, he divided his subject into three parts—(1) measurements and maps; (2) statistical records and the assessment of land revenue; (3) fixing of rents between landlord and tenant. Of these divisions the first dealt with survey, the second and third comprised valuation in its two aspects. In regard to survey, he said that in "the early days from 1822 to 1842, the only scientific work consisted in an outline survey of the village boundary on a scale one-fourth of that now employed for the field survey. For this portion of the work a trained staff under European supervision was required, and out of this body, of which the heads were mostly officers of the Bengal Artillery, the present department of revenue survey was developed. Those outline maps were copied by hand; they showed, in addition to the exact outer boundary, the configuration in outline of the waste and cultivation. With these maps was furnished a combined map on a smaller scale for the whole district or for each sub-division of it. But before this or any survey could be attempted it was necessary to mark the village boundaries. The work of setting out the village boundaries falls to the revenue officials of the district. The native sub-collector visits the village and calls upon the head men to point out the boundary line. If there is no dispute, the triangulation points are marked temporarily by earthenware pipes, something in the shape of a drain pipe, and the intermediate windings by small heaps of earth. If all parties are agreed a signed paper is taken from the head men of the villages concerned, and the boundary marks are made over to their custody until the arrival of the surveyors. The permanent triangulation pillars are either of stone, 5 ft. or 6 ft. long and 1 ft. thick, or of brick about 3 ft. square and 2 ft. above the ground. It used also to be the custom to bury a pot of charcoal under the pillar, in order to afford evidence should it be knocked down by cattle or wilfully removed by the villagers. In a considerable number of cases, however, the position of the boundary is disputed. . . . These disputes must be decided upon evidence of possession, unless the parties will consent to abide by some particular map or by the decision of an arbitrator. The dispute is especially difficult of adjustment when the line runs through uncultivated land, or land under water. The repeated preparation of maps under renewed surveys has now made it possible to arrive in most cases at some conclusion satisfactory to the deciding officer, if not to the parties. But fifty years ago it was sometimes quite impossible to find on evidence how many feet one way or the other a boundary should be laid down across a piece of brown waste without one distinguishing mark, where one bush or one blade of grass was exactly the same as every other. The only resource left was to adopt some mode of trial by ordeal, which the superstitions of the villagers would lead them to respect. . . . After the boundaries are marked out comes the actual measurement." The author then referred to the agency employed for the combined work of (1) actual survey and map-making; (2) recording rights in land; (3) ascertaining the value of the land and fixing the Government dues. In the earlier period (1822-1842) the field-map was a mere sketch not drawn to scale, and thus naturally was treated as an entirely subsidiary part of the record and assessment work. Thus it fell without any question within the domain of the revenue officer. The native mode of measuring was to take a bamboo pole, a knotted rope, or a chain round the four sides of the field, and then get out the area by certain formulæ, the result of which was quite accurate enough for the purpose. From 1833 it became the rule for the surveyors to furnish these rough maps and the accompanying lists, giving the number of field, its position, the length of its four sides, the area, and the name of the tenant. When a renewal of operations became necessary, owing to the approaching expiration of the term of years for which the revenue had been fixed, occasion was taken to direct that the native field maps should be drawn to scale, 16 in. to the mile; and it was ordered that the surveying should, so far as possible, be done by the ordinary village accountants, who were to receive special training for the purpose. For twenty years this plan was pursued with varying success. In reality, most of the work was done by special men entertained temporarily by the village accountants. In some cases the maps were remarkably accurate, but between district and district the quality varied a good deal. As each district was taken up, a new establishment had to be extemporised for the purpose, and the quality of the out-turn was somewhat uncertain. The boundaries of two adjacent villages would sometimes be found not to coincide when their maps were compared, and the areas of waste land were often carelessly dealt with. In some cases where the assistant in charge under the revenue officer had received his early training in the Survey Department, he introduced a system of traverses which secured a check on the work and kept possible errors within narrower limits. Meanwhile the professional survey department, as time went on, began to find that its topographical and boundary map work was being exhausted, and if it could not find fresh fields, it stood a very good chance of being abolished. It urged its claim to be used for making the detailed surveys, which up to that time had been in the hands of the revenue officers. About 1875 a change was made, and under the name of the Cadastral Survey the work was confided to the Survey of India, of which it became a branch. The accuracy and the technical excellence of the maps were thereby vastly increased. The cost, however, was at the same time much added to. The old settlement survey cost Rs. 60, the Cadastral, about Rs. 152 per square mile. The author then described the Cadastral Survey, and in subsequent parts of his paper he dealt with the definition of a survey "field," record work, assessment of the land tax, the system of 1868-1883, the percentage of assets taken, rent rolls, the new rules of 1885, recent modification of survey and record, fixing rent between landlord and tenant, and annual village accounts.

Mr. Daniel Watney proposed a vote of thanks to the lecturer, which was seconded by Mr. J. H. Sabin.

A short discussion followed, in which Sir E. Jenkinson and Messrs. Howard Martin and H. C. Newmarch took part.

The vote of thanks having been passed, and Mr. Irvine having replied, the meeting terminated.

COMPETITIONS.

LUNATIC ASYLUM, NEAR BIRMINGHAM.—The whole of the plans prepared by the six selected architects in competition for the new lunatic asylum which the Corporation propose to erect at Holly Moor, near Rubery, have been deposited at the Council House. The names of the competing architects are Messrs. Cossins, Peacock, & Bewlay, Messrs. Mansell & Sons, Messrs. Ingall & Sons, Messrs. Cross, Brookes, & Nicholls, Mr. Frank B. Osborne, and Messrs. Martin & Chamberlain. Before making a final selection the Asylums Committee will take the advice of Mr. G. T. Hine, of London, the Consulting Architect to the Commissioners in Lunacy.

BIRMINGHAM CLERKS OF WORKS ASSOCIATION.—The annual dinner of the Birmingham Clerks of Works and Builders' Foremen's Association was held at the White Horse Hotel, Congreve-street, on the 1st inst. County Alderman John Bowen, in responding to the toast of the honorary members, congratulated the Association upon its success. The Association must be of great service to the building trade of Birmingham, and deserved the support of the Master Builders' Association. Mr. Whitall, vice-president, endorsed the views of Mr. Bowen. Mr. Cummings proposed "The Health of the Officers," and Mr. Patchett, the President of the Association, responded.

Books.

Quantity Surveying, for the Use of Surveyors, Architects, Engineers, and Builders. By J. LEANING. Third Edition. London: E. & F. N. Spon. 1897.

THIS third edition, of a now well-known work, is considerably more than a reprint of the former editions, having been considerably amplified in various chapters; the more important items being the examples of "Billing" following the descriptions of the modes of measuring the various works. Some of these are so obvious, that we think the illustration was hardly necessary, and, in some cases, there will be a wide diversity of opinion as to the examples shown. In our opinion, the practice of "setting in" the labours following an item, as given on pages 70 and 71, is somewhat dangerous; in fact, we have known instances of such items being missed in the hurry of pricing. While, of course, the builder should carefully read down the whole of the bill, the form of the bill should be such, as to leave no possibility of such an error; these items, in a proportionate degree, being of as much importance as those which they follow. In the example given of asphalte paving, we do not see the reason for setting in the "94 ft. run extra labour forming gutter," and giving the "70 ft. run extra for forming channel 9 in. wide" the more dignified position of the "feet" column, unless in the latter case, the item is for "extra labour and materials." If so, it should have been stated.

The directions for measuring masons' work—the *pons asinorum* of the young surveyor—have been usefully amplified, as well as the chapter on pricing.

The chapter on "Law" is useful as a help in defining the position of the quantity surveyor, although that is still somewhat unsatisfactory. Most surveyors will, we think, agree with the author, as to the advisability of making the quantities part of the contract.

With regard to the general contents of the work, the book is so well known that these do not call for any special notice.

Electrical Installations, for Architects, Borough Surveyors, Civil Engineers, &c. By F. J. WARDEN-STEVENS, A.M.I.E.E. London: Gilbert Wood.

IN this small book the author has endeavoured to give those facts connected with the generation and supply of electricity for lighting purposes which it would be advantageous for architects and others who have to advise their clients to know. The matter treated of is good, and Mr. Warden-Stevens is evidently at home in his subject, but the very condensed form in which the information is conveyed, together with a certain want of perspective in arranging the matter, considerably detracts from its value. In the first forty pages of this book, engines, boilers, dynamos, accumulators, buildings, &c., are illustrated and described, and a certain amount of theory is given. To the general reader very little knowledge will be gained by reading about "the characteristic of a series-wound dynamo" and "armature reaction"; in fact, talking about the "characteristic" instead of the "characteristic curve" would only mislead him.

Some people would be puzzled on reading the following: "It is obvious that in an installation the positive cable will be attacked and corroded if there is the slightest leakage, the same chemical and electrical laws applying to this as to accumulators." It is most certainly very far from being obvious, and a statement like the above would only lead the general reader to draw most erroneous conclusions.

A few notes on working installations are given, which are good as far as they go, but they are utterly inadequate to be of any real use. They give one the impression that there is always unlimited assistance forthcoming in the shape of unskilled labour at every installation, which, with the help of a few hints, will be able to replace the ordinary mechanic. Considering that the author states in his introduction that a competent consulting engineer should always be called in, it seems out of place that advice should be given how to erect particular parts of the plant. Either the whole process of erecting should be given or it should be left entirely to the consulting engineer.

The chapter on wiring is good, and Mr. Warden-Stevens's graphical methods of dis-

cussing the relative costs of electric lighting from public and private supply are to be commended.

The Law and Practice of Compensation. By H. C. RICHARDS and JOHN H. P. SOPER, Barristers. London: Frank P. Wilson, *Estates Gazette* Office, and Sweet & Maxwell.

EVERY year property in land has to be taken for some public or general purpose, and compensation is accordingly claimed by the owners of such property. The principles on which it is based are now pretty well understood, and they can be stated concisely. On the other hand, the large number of cases which have been decided either by arbitration or by juries now give some kind of rough guide to the probable result of a trial as to the amount of compensation. It is the practical aspect of the question which is chiefly treated of in this book. The legal principles and the Acts of Parliament are clearly and concisely stated, numerous forms are given, and there is an appendix of specimen cases. The last appendix consists of a list of compensation cases heard in London and the provinces, which have been reported in the *Estates Gazette*. We think the authors were mistaken in inserting the appendix; it occupies from page 524 to 589, and unnecessarily increases the size of the book. It would be all very well to issue such a document to subscribers to the above journal. The list of specimen cases is interesting, though the reports might, perhaps, have been analysed, and something less detailed have been printed. The differences of opinion expressed by experts are striking. Thus in the case of Onslow *v.* the Woking District Council, a claim of 13,000*l.* odd was made in respect of the taking of certain land for the purposes of a sewage farm and for depreciation to the rest of the property. It was contended for the Council that the estate was not building land, and the witnesses for it put the proper compensation at from 3,900*l.* to 4,800*l.* The umpire awarded Lord Onslow 8,250*l.* What at once strikes an impartial person is that there should have been no question as to whether or not the land could be properly considered as building land. It is unnecessary to criticise this book at length, it is a useful and handy publication which will be found a convenience to all who are interested in the subject of which it treats.

Elementary Physics, Practical and Theoretical —First Year's Course. By JOHN G. KERR, M.A. London: Blackie & Son, Limited. 1898.

WITH so many good works on elementary physics already in existence, it is not to be expected that any author is able to produce very startling results in writing a new book on the same subject. But Mr. Kerr has at least succeeded in presenting many elementary physical problems in an attractive and sympathetic way for the young student, and is eminently practical throughout. The simplicity of this little book in dealing with such subjects as "measurement of length," "of area," "of volume," "of mass," is admirable. One of the chief drawbacks to the average modern book on elementary physics is the general tendency on the part of its author to suddenly plunge into mathematics in or near the opening chapters. This wearies and disheartens the young student, and shows that the writer is not in touch with the material he desires to mould. Mr. Kerr is evidently a man of more experience, and what little mathematics he introduces is gradually and insensibly led up to. The principles of the beam balance are carefully explained, and the measurements of time and force have two chapters devoted to them. The triangle and the parallelogram of forces, the inclined plane, centre of gravity, velocity and acceleration, relative density, pressure, and other kindred matters are proportionately recognised. The book is divided into two sections: (1) Laboratory work, and (2) Class-room work; and there are corresponding chapters in each section for any one subject treated of. The only exception we take to the general observations in this excellent little treatise is the statement that in doing the laboratory work the "number of sets of appliances need not exceed half the number of pupils, and in many cases it will be found sufficient to arrange for four pupils to one experiment." Our experience is that in elementary science demanding some little piece of apparatus for its effective demonstration, it is better that only one student shall operate at a time with any particular appliance. A common blunder on the part of such "educational bodies" as the Science and Art Department and certain of the County Councils, is to lay down a curriculum, or to aid and abet one, in which practical work is a principal feature, and then, by refusing to provide sufficient apparatus, to make it impossible for the teacher to satisfactorily carry out the course of instruction laid down.

Proposed Revolution in the Science of Meteorology. By W. G. WENLEY. Chelmsford.

THIS is one of those marvellous productions, the "outcome of the highest phase of advanced modern thought," which is destined, in course of time, to revolutionise scepticism and to change the face of Nature. The present methods of forecasting weather are all wrong —the only man who really understands the matter is the writer of this pamphlet. The barometer is maligned when it is stated to indicate "much rain," "set fair," &c.; it has no intention to indicate anything of the kind. It does not go "up" or "down," or send a hand round a dial in obedience to the weather. If you take one "to the top of St. Paul's, it will fall $\frac{4}{10}$ of an inch; if brought down it will rise as much; and this it will do 50 or 500 times in a day if carried up and down so often." This is an "illustration of its proper office." The Dean and Chapter should widen the staircase to the top, and then give notice to her Majesty's judges—the treadmill is out of date. The fault of meteorologists hitherto has been that they have not given sufficient attention to the effect of gravitation upon the air. "This Cinderella of the sciences is not less, but more, beautiful and beneficent than either of her older and rather haughty sisters." All sorts of authorities are cited, including "Chambers' Encyclopædia," "Mrs. Somerville," "Admiral Fitzroy," the "Captain of H.M.S. *Porcupine*," "Whitaker," the "Nautical Almanac," &c., and even such phenomena as the eruption of Krakatoa, the tallow candle, and the switchback railway, are not neglected. We recommend this revolutionary project to the notice of the Admiralty, the Meteorological Office, and the County Council—it explains many difficulties, and is full of useful hints.

The Gas Engineer's Pocket-Book: comprising Tables, Notes, and Memoranda relating to the Manufacture, Distribution, and Use of Coal Gas, and the Construction of Gas Works. By HENRY O'CONNOR. Crosby Lockwood & Son. 1898.

ALTHOUGH intended primarily for the gas engineer, this book will be found a useful work of reference by all interested in lighting or heating by gas, while the collection of the analyses of the various descriptions of gas will be of value to the technical chemist.

All matter in any way connected with the manufacture and use of gas is dealt with, from the methods of clearing choked ascension pipes to the mathematical tables required in the drawing office.

The following table, giving the consumption of gas per head of population, is of general interest, although its interpretation will probably largely depend upon the reader's attitude with regard to the use of gas :—

London	...	...	5,000	cubic feet.
England	...	...	2,450	"
France	...	...	560	"
Germany	...	...	350	"

The book is not free from errors, for on pages 331 and 332 the formula CO_2 is used where it should be CO, and on page 354 the quotation ·0896 grains should be ·0896 gram; as a whole, however, it has evidently been carefully compiled and printed, and reflects credit on both author and publisher. Possessing a copious index, which in a work of this description is of the utmost importance, the pocket-book certainly constitutes a useful addition to gas literature.

TRADE CATALOGUES.

THE Hartshill Brick and Tile Company send us their illustrated catalogue of terra-cotta roofing tiles, finials, crosses, &c., red blue and buff-coloured paving tiles, encaustic and glazed tiles, ornamental terra-cotta panels, &c. A special feature in the make-up of the catalogue is that the numbers and prices of articles on each page of illustrations are printed in schedule form on the facing page, a matter of great convenience in giving orders for goods. ——Messrs. Steel & Garland send us their illustrated catalogue of the different designs of their Marlborough Ventilating Grate for schools, hospitals, and public buildings. A section of the grate, for those who are not acquainted with its construction, is given on the back of the catalogue. In this case one has the rare pleasure of being able to give general praise to the designs shown in a trade catalogue—a pleasure we wish we had oftener. They are all in good taste, both in general line and in detailed treatment. There is not much ornament, and what there is is quiet and unobtrusive in style. No. 1,476*b* would be better without the filagrees in the angles, No. 1,121 better without the ornament (cast, we suppose) round the opening; but for the most part these are designs which will afford a satisfactory selection for an architect. Among the grates illustrated is the "Adjustable," which can either be used as an open well fire or as a bar-grate; the bars arrange to be raised or lowered at pleasure.

BOOKS RECEIVED.

DESHASHEH: Fifteenth Memoir of the Egypt Exploration Fund. By W. Flinders Petrie. (Kegan Paul & Co., and B. Quaritch.)

THE STANDARD ELECTRICAL DICTIONARY. By T. O'Conor Sloane. (Crosby, Lockwood & Son.)

OCCASIONAL PAPERS, Association of Surveyors of H. M. Service. (Inverness: R. Carruthers & Sons.)

SPON'S ARCHITECTS' AND BUILDERS' PRICE-BOOK. By W. Young. (E. & F. N. Spon.)

THE CATHEDRAL CHURCH OF NORWICH. By C. H. B. Quennel. (Geo. Bell & Sons.)

THE CATHEDRAL CHURCH OF PETERBOROUGH. By the Rev. W. D. Sweeting. (Geo. Bell & Sons.)

Correspondence.

To the Editor of THE BUILDER.

"DESIGN AS INFLUENCED BY CIRCUMSTANCE."

SIR,—In your critical but generally appreciative article upon my book, "The Bases of Design," in quoting from the opening paragraph you make me say, "We should be tracing the *cause* of human thought and history themselves" (in tracing the history of design). The word I use is *course*, however, which makes some difference to the sense.

I will not venture to traverse the opinions which you express upon questions of opinion, whereon we mostly differ, but perhaps you will allow me a comment on one point—that of the question of the origin of the pointed arch. In speaking of the "actual birth of the pointed arch," I must not be understood as speaking of the actual historic or constructive origin.

It will hardly be disputed, I presume, that the interlacing semi-circles of the transitional arcade actually demonstrate, or define, the form of the early pointed, or lancet, arch? This, at any rate, was quite sufficient for my purpose, which, as stated previously (on pp. 5), was "to trace the influence of the main types (of architectural form) in determining the form and character, and controlling spaces and lines of the decoration, both surface and sculptured design, which accompanies them."—I am,

WALTER CRANE.

13, Holland-street, Kensington.
March 6, 1898.

*** "Cause" for "course" was a printer's error which escaped notice. As to the question of the interlacing round arches, we must still think that the words, "the actual birth of the pointed arch," will convey the impression to most readers that this interlacing of round arches was its real origin; and this is such a complete fallacy, and has been unfortunately so often repeated, that we regretted to see language used which is calculated to confirm the idea in the popular mind; and if Mr. Crane's interesting book reaches a second edition, we hope this passage will be altered.—ED.

THE LATE SIR WOLLASTON FRANKS.—We understand that the Fellows of the Society of Antiquaries are invited to subscribe for a bust, to be placed in the Society's rooms, of Sir Wollaston Franks, and that Mr. Charles J Praetorius has already modelled in wax a profile portrait, based upon some sketches in his possession. It is proposed, further, to present a replica of the bronze bust to the British Museum, of which Franks was an *ex-officio* trustee, and to which he was so generous a donor out of his own collections.

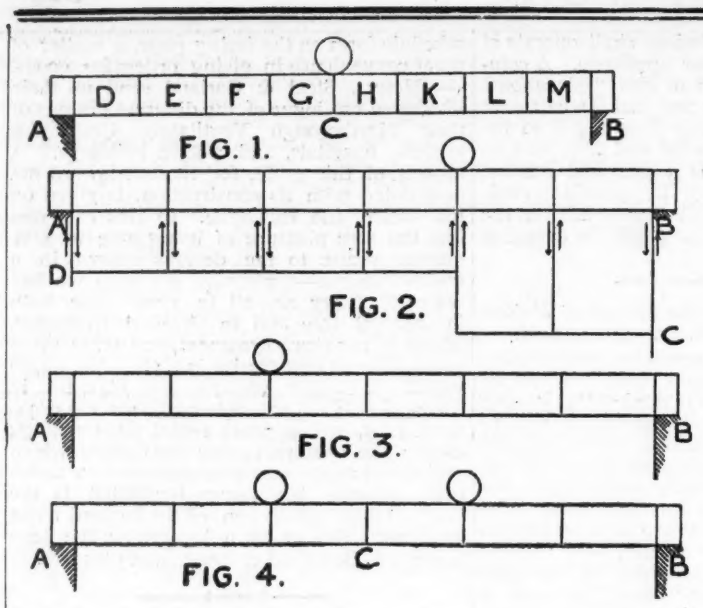


FIG. 1.

FIG. 2.

FIG. 3.

FIG. 4.

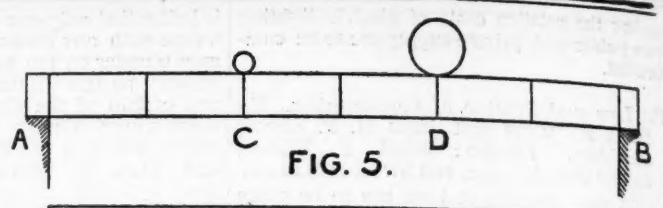


FIG. 5.

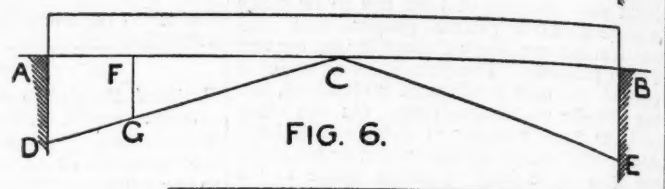


FIG. 6.

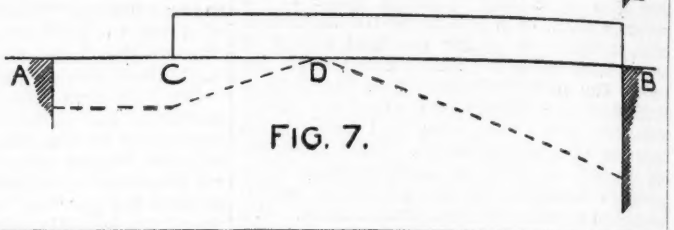


FIG. 7.

The Student's Column.

THE CALCULATION OF STRENGTH OF MATERIALS AND RESISTANCES.—XI.

WHEN a loaded beam rests upon two supports there is—besides the tendency to bend under the load which we have been considering—also a tendency for the vertical downward action of the load, and the upward vertical reaction of the support to cut or shear the beam in a vertical line. And although in practice beams rarely fail by shearing, save when they are heavily loaded close to the points of support, the vertical forces which tend to produce shearing exist in all beams whether of solid or open and trussed construction. It is a common practice in the case of iron and steel beams to regard the web as resisting the shearing stress, and the flanges the longitudinal compressive and tensile stress, and, although not strictly correct, this assumption is sufficiently near the truth for practical purposes.

We may therefore proceed to investigate the nature of the shearing stress coming upon a beam. If we suppose in the diagram (fig. 1) A B to represent a beam supported at points A and B, and loaded with a central load at C, and suppose also that the beam is divided into a number of slices, D, E, F, G, H, K, L, M, then if we consider the relations of the two adjoining slices, H and K, we may assume the slice H to be pressed downwards by a portion of the load which goes to the support B, whilst its neighbouring slice K is pressed upwards by the vertical upward reaction of the support B. There is, therefore, a vertical stress equal to half the load tending to shear the beam across on the vertical plane separating the two slices H and K. A similar shearing stress exists between K and L and between L and M, and as the downward pressure upon the support B is unchanged between C and B, and the vertical reaction of the support is also unchanged, it follows that the shearing stress is equal between each pair of slices. Similarly with the slices between C and A; it follows therefore that the central load upon the beam supported at both ends causes a uniform shearing stress equal to half the load throughout the beam.

Between the slices G and H, on the central line of the beam, there is no shearing stress, because these sections evidently have no tendency to slide past each other.

A single concentrated load produces its greatest shearing stress when placed on one end of the span of the beam immediately over the edge of a support. In this case the shearing stress is then equal to the load, but there is no shearing stress in any other part of the beam. If we consider the load moved along the beam, then the shearing stress in front of it increases uniformly, and behind it decreases uniformly, until the load reaches the other end of the beam, when we again have it in the position that produces the greatest shearing strain, but on the opposite side. Thus, in the examples shown in figs. 2 and 3, where the concentrated load is not at the centre of the beam, the upward reactions of the supports are consequently unequal, and therefore also the shearing stresses in the two portions of the beam. We may represent this graphically, as in fig. 2, B C representing, to any scale we please, the reaction of the support B, and A D the reaction of the support A. Then the shearing strain, at any point in the beam, can be measured as shown.

In fig. 3 we have a similar arrangement, but with the load nearer to the support A than B. As we have already explained in Chapter IX., the reaction of either support is equal to the load multiplied by the distance from the centre of gravity of the load to the other support, and divided by the whole span, and the shearing stress is, as we have already seen, equal to the reaction of the support. In fig. 4 we have two concentrated loads of equal weight, and each placed at the same distance from the support, and it might be supposed that the shearing stress at any point might be found by adding together the stress at that point under the conditions of fig. 2 to the stress under the conditions of fig. 3; but this is not the case, except for those points between a support and the load nearest to it, inasmuch as the vertical forces at any such point are in the same directions, and thus combine in their effect; but at any point between two loads the vertical forces act in opposite directions, and consequently counteract each other. This we shall see clearly if we consider the tendency to motion of the slices on either side of the central line. In fig. 2 the slice on the right hand of the central line being nearer to the weight, tends to slide downwards past that on the left hand of the central line, whilst in fig. 3 the reverse is the case, so that in fig. 4, where we have a combination of the figures 2 and 3, these equal and opposite shearing stresses counteract each other, and there is consequently no shearing at C.

Again, if we were to suppose the loads in fig 2 and fig. 3, instead of being equal, to be unequal, and combine them as in fig. 5, we should see that the shearing stress in C D is equal to the difference between the shearing stresses in the corresponding portion of the beam when loaded with one or other of these unequal weights.

From these cases which we have considered, we can, therefore, deduce the following rules:—The shearing stress at any point of any beam fixed or supported at one or at both ends and loaded in any manner, is equal to the difference between the upward vertical reaction of either support and any load on the beam between the point selected and the support. Again, if we suppose that the part of the load to the right of any particular point in the beam be called B and that to the left of it A, then the shearing stress at that point will be equal to the difference between that portion of B that goes to the left-hand support, and that portion of A that goes to the right-hand support.

In applying these rules to a point immediately under a concentrated load, it would be theoretically correct to consider the line immediately under the point of application of the load as the dividing line between the two portions of the concentrated load, which go to the two supports respectively; but in practice it is safer to consider the shearing stress immediately under the load as equal to the greater of the two shearing stresses on each side of it.

From the above it follows that with an evenly-distributed load over a beam the shearing stress is greatest at the supports, at each of which it is equal to half the load; from each support it diminishes uniformly to the centre, where it is nothing. We can, therefore, readily determine graphically the sheering strain at any point we please in the beam by drawing to scale A, D, B, E (fig. 6), to represent the shearing stresses at each support, joining lines from D and E to the middle point C of the beam, and then measuring the vertical height F G on the same scale as before, which will give us the shearing stress at the point F.

The same principle may be applied in the case of a beam uniformly loaded from one of its supports, as in fig. 7, although the working is not perhaps quite so simple. In such a case, if we suppose a beam A B to be loaded from C to B, the greatest shearing stress is at the support B, and is equal to the portion of the load borne by that support. From that point it decreases uniformly to nothing at a point D, which is always within the load itself. To find this point we adopt the same expression as that for finding the greatest bending moment which is at the same point as the least shearing stress in the beam. Thus:—

$$A\,C = \frac{C\,D^2}{2\,A\,B}$$

From the point D the shearing stress again increases uniformly to the point C at the same rate of increase as from D to B, and from C to the support A the shearing stress is equal to the portion of the load supported at C, as shown by the dotted line in fig. 7.

OBITUARY.

MR. JAMES EDMESTON.—We regret to record the death of Mr. James Edmeston, a well-known architect in the City, and one of the oldest members of the Institute of Architects, of which he was elected an Associate in 1856, and a Fellow in 1859. Mr. Edmeston was also a Fellow of the Surveyors Institution. He had also been one of the original members of the "Society for the Encouragement of the Fine Arts," in which he took much interest. He was also a member of the Common Council, as Deputy for Broad-street Ward, and took much interest in questions connected with the architectural treatment of the City of London.

MR. ARCHIBALD BINNIE ALLAN, C.E.—Mr. A. B. Allan, C.E., the Borough Surveyor of Govan, whose death is announced, was the son of Mr. Hugh Allan, of the late firm of Allan & Mann, brickmakers, builders, and contractors, Glasgow. He was the grandson of Mr. James Allan, for many years manager of Govan Colliery, and was a pupil of Professor Rankine at Glasgow University, where he carried off the second "Walker" prize for an Oral Examination, and took his certificate as a Civil Engineer in 1870. He was afterwards an office pupil of Mr. Maclure, Civil Engineer, Glasgow, whence he went to the Office of Public Works of Glasgow. While connected with this office, he read a paper before the Society of Civil Engineers of Glasgow, strongly advocating the establishment of public standards of measure for the verification of surveyors' chains and tapes, a suggestion which was carried out by the civic authorities. In 1880, Mr. Allan was appointed Borough Surveyor of Govan—a post to which he was warmly recommended by his chief in the Glasgow Office of Works, Mr. John Carrick; from which time he may be said to have devoted his life to the interests of that Borough. An article in the *Govan Press* speaks in very high terms of his character and ability.

GENERAL BUILDING NEWS.

PROPOSED NEW CHURCH AT SANDYLANDS, MORECAMBE.—Messrs. Austin & Paley, Lancaster, have prepared plans for the proposed new church at Sandylands. The site is at Cross Cop, on the Lancaster side of the road. The church will provide seating accommodation for 450 persons.

PROPOSED NEW CHURCH AT NEW HARTLEY, NEWCASTLE-ON-TYNE.—In connexion with the proposed new church at New Hartley, the first committee meeting has been held, when the plans of Mr. J. Dobinson, of Seaton Delaval, were submitted and agreed to.

NEW CHANCEL AND ORGAN, ST. JOHN'S CHURCH, MONKSTOWN, DUBLIN.—On the 1st inst. new chancel, organ, and other additions to St. John's Church, Monkstown, were dedicated. The chancel has been lengthened 12 ft. The work in connexion with the church itself was designed by Mr. R. Caulfield Orpen, and executed by Mr. R. E. Mellon, of Rathgar. The organ was built by Messrs. P. Connacher & Sons, of Huddersfield.

RESTORATION OF DOVERCOURT CHURCH.—This church has just been reopened after restoration, the architects for the restoration being Messrs. J. E. K. & J. P. Cutts. During the progress of the work several old and interesting architectural features have been brought to light. In the chancel it was found that the windows had at some period been altered in shape and design. Two small windows east of the old chancel-screen have been opened, having been only roughly filled in at the beginning of the present century. Just west of the chancel arch is another low window, which also was blocked up about 1811, and has now been reopened. Close to this window there is a piscina, pointing to the fact that there was an altar outside the screen as well as the one in the chancel. Immediately opposite, in the north wall, are the old stone steps leading to the rood loft; and further down the church, one on either side, are the stone quoins of two Norman windows. There is an oak "poor-man's box" bearing the date 1569, with two locks and two keys. With regard to the extent of the renovation, the roof has been retiled and the stone gable and cross at the east end renewed. The ceiling has been removed, and the old oak timbers of the roof uncovered. A false wall of lath and plaster, which ran the whole length of the church, from east to west on both sides of the interior, has been removed. Three new windows have been opened up and filled with stained glass. The old stone steps leading up in the thickness of the wall to the rood-screen have been revealed, and the stone quoins of the windows have been restored. The porch has been reroofed and also the vestry, and the only thing that now remains to be done is the re-facing of the old tower. A new organ by Messrs. Rayson & Son, of Ipswich, has also been provided. —*East Anglian Times.*

DIOCESAN CHURCH HOUSE, ABERDEEN.—A new Church House is to be erected in Dee-street by the Aberdeen Diocesan Association. At present only a part of the whole scheme is to be proceeded with. Fronting Dee-street, on the ground floor, there are a library and a committee-room. On the first floor, occupying the whole of the frontage, is what will be known as the Suther Memorial Hall, which will provide accommodation for 180 persons. On the second floor are billiard, card, and committee rooms, and on each of the floors there are cloak-rooms and a lavatory. The basement floor contains the caretaker's rooms. The estimated cost of the work to be proceeded with is 1,600*l.*, and the total cost of the completed building 4,000*l.* The architect is Mr. Arthur Clyne.

CHURCH, MITCHAM.—At Killicks-road, Mitcham, on the 26th ult., the foundation stone of the new Church of St. Mark was laid. The church will comprise nave and aisles, north and south transepts, apse, baptistry, north porch, and a small bell turret. The architects are Messrs. R. M. Chart & Son, of Croydon and Mitcham; and the contractors are Messrs. D. Stewart & Sons, of Wallington, the amount of their contract for the first portion (nave and aisles), exclusive of furnishing and heating, being 3,319*l.*

BAPTIST SCHOOLS, CARDIFF.—The new Baptist schools at Albany-road, Cardiff, were opened on the 2nd inst. The building is in the Renaissance style. The front elevation is carried up with three gables, and is built with Newbridge stone and Bath stone dressings. The schools consist of a large school-room 55 ft. by 34 ft., with a vestry-hall at one end separated from the main schoolroom by a folding partition. It is intended to hold services in this schoolroom until the church is erected, and for this purpose a rostrum and baptistry have been provided. Besides the schoolroom there is an infant's class-room, 28 ft. by 21 ft., and ten other class-rooms. The buildings were erected from the designs, and under the superintendence of, Messrs. Habershon & Fawckner, architects, Cardiff. The contract amounted to 2,300*l.*

SCHOOL ACCOMMODATION, FEATHERSTONE, YORKSHIRE.—Plans for a new school for the Featherstone School Board have been prepared by Mr. W. H. Fearrill, architect, Featherstone, for the accommodation of 450 children.

SCHOOLS, QUAINTON, BUCKS.—New schools are to be erected at Quainton, to accommodate 266 children, at a cost of 1,747*l.* The designs, selected in a limited competition, have been prepared by Messrs. W. F. Taylor & Son, of Aylesbury and Thame. The contractors are Messrs. King & Cannon, of Quainton, who have already entered upon the work.

HOSPITAL FOR HERTFORD, WARE, AND HODDESDON.—A hospital has been built at the joint expense of the towns of Hertford, Ware, and Hoddesdon, and the rural parishes which are comprised within the Hertford and Ware Unions. The site, which comprises about eight acres, is situated at Gallows Hill, about a mile from Hertford. The hospital consists of three pavilions. The centre pavilion provides four beds for diphtheria; and each of the others comprises two wards, and provides ten beds, for the treatment respectively of typhoid and scarlet fever. Besides the wards, in each pavilion there is a nurse's room, bath-room, store, &c., and the central pavilion has a verandah roofed in with glass. Separate from the pavilions is the administrative block, a building of three stories. On the ground floor there is the surgeon's room, a laboratory for the use of the medical officer of health, matron's sitting-room, nurses' mess-room, kitchen, scullery, larder, store, &c. On the first floor there are seven bedrooms, a bath-room, and store-room, and on the second floor two bed-rooms. The laundry is situated at the back of the pavilions. The hospital is constructed of brick. The architect is Mr. W. L. Grant, of Sittingbourne, and the builders are Messrs. Ginn & Son, of Hertford, whose contract was for 5,454*l.* Mr. J. Fitter, of Tottenham, has acted as clerk of the works.

NEW BLOCK, THE DELANCEY HOSPITAL, CHELTENHAM.—On the 5th inst. the new diphtheria block which has just been added to the Delancey Fever Hospital was opened. The new block is isolated from the main building, and is built of Stonehouse bricks, with Bridgwater tiles for the roof. The ground plan is 66 ft. by 34 ft., the total length, with offices, &c., being 88 ft. The accommodation provided consists of three wards for two beds each, 24 ft. by 12 ft., and 17 ft. high; convalescent ward, 24 ft. by 12 ft.; nurses' room, bath-room, stores, &c., arranged round a corridor 6 ft. wide. Messrs. Middleton, Prothero, & Phillott were the architects; and Messrs. Collins & Godfrey the contractors. The total cost will probably reach 2,500*l.*

WORKHOUSE INFIRMARY, WARRINGTON.—On the 24th ult. the foundation-stones of the new workhouse infirmary at Warrington were laid. The new infirmary, which is in close proximity to the workhouse, will have accommodation for 200 beds. The contractor is Mr. C. W. Davenport, of Stockton Heath, and the architects are Messrs. William and Segar Owen, of Warrington. The present contracts will deal with three large blocks of buildings standing some 70 ft. apart, but connected on each floor with open-air corridors 10 ft. wide. The central will be the administrative block, three stories high, and the two outer blocks will be ward pavilions, each two stories high. Under the whole of the buildings there will be a basement for access to heating and water-pipes, &c. The administrative block will give accommodation on the ground floor for the medical officer, head nurse, dispensary, waiting-room, nurses' sitting and dining-rooms, linen and other stores, and on the first and second floors there will be bedrooms and other apartments for the housing of the nursing staff, and each floor will be fitted with baths, lavatories, &c. The public entrance will be in the centre of the administrative block. The other two blocks, one for males and the other for females, each accommodate ninety-two beds, or a total of 184. In each block there will be two wards of twenty-four beds, two wards of twelve beds, two wards of four beds, and six wards of two beds each. The pavilions will be about 240 ft. long. There will also be ward kitchens, linen-rooms, separation lobbies, and lifts. All wards will be heated by open fireplaces, or central open fire Musgrave stoves, but in every case the heating will be augmented by hot-water pipes or radiators. The floors will be fireproof of Messrs. Homan & Rogers' construction. There will be an outer stair of iron. Externally, hard grey brick will be used, with terra cotta and red-pressed brick dressings.

PROPOSED SANATORIUM, GOSPORT.—The contract for erecting this building has been given to Mr. John Croad, of Gosport. There will be three distinct buildings, the hospital itself being quite apart from the administrative and laundry blocks. Internally there will be two distinct hospitals, each having an entrance of its own. Altogether there will be room for sixteen beds. Separate wards for men, women, and children, will be provided at both ends of the building; that at the western end for women being 36 ft. in length by 22 ft., and containing five beds, while that for men will be 24 ft. by 16 ft., and will contain two beds. The eastern end will be similarly arranged, the exception being that the women's ward will be 19 ft. in width, for three beds only. Nurses' rooms are also provided, and a verandah, 40 ft. long by 10 ft., will surmount the necessary offices. In the administrative block will be a nurses' sitting-room on the first floor, a second story furnishing two large and three small bedrooms, with an attic floor above. Mr. G. E. Bolshaw, of Southport, is the architect.

INFIRMARY, MELKSHAM, WILTSHIRE.—At the workhouse of the Melksham Union an old building intended for infectious diseases has been entirely remodelled, at a cost of 1,260*l.*, according to the designs of Mr. Walter W. Snailum, architect, Trowbridge. The building is now practically a modern infirmary for thirty patients. Mr. Linzey, of Trowbridge, was the contractor.

PROPOSED ALTERATIONS TO CLAYTON HOSPITAL, WAKEFIELD.—Plans of the proposed works at this hospital have been prepared by Mr. W. Watson, architect. They have been approved by the Hospital Committee, and adopted by the City Council. The consulting rooms are to be enlarged, a new mortuary is to be erected, and a new laundry is to be built.

PROPOSED NEW MUSIC HALL AND CIRCUS, BIRMINGHAM.—It is proposed to erect on a plot of ground adjoining the Inge-street extremity of the Assembly-rooms in Hurst-street, a hall, which it is intended to use not only for concerts and theatrical performances, but also for equestrian entertainments. The hall will be 114 ft. long by 94 ft. wide, the floor being sunk below Inge-street to the basement level, and so arranged that the centre may be used as a circus arena. The stage, 36 ft. wide by 26 ft. high and 16 ft. deep, will face Inge-street side, and in addition to a promenade running completely round the floor, there will be a balcony extending along three sides of the building, and terminating close to the proscenium. There will be three entrances in Inge-street, and another—by means of a basement corridor extending under the Assembly-rooms—from Hurst-street. The floor is to be so constructed that, if necessary, the circus base may be instantaneously lowered and filled with water. The building will be of red brick and terra-cotta. The architect is Mr. F. W. Lloyd, of Birmingham.

PALACE THEATRE, BLACKBURN.—This theatre, the erection of which is shortly to be commenced, will be situated at the Jubilee-street end of the boulevard, directly opposite the railway station. The theatre will give accommodation for about 2,500 people. The building will be erected and completed under the superintendence of the architects, Messrs. J. T. Wimperis & Arber, of London.

PROPOSED TECHNICAL SCHOOL, DUNFERMLINE.—It is proposed to erect a technical school at Dunfermline, from plans prepared by Mr. D. Barclay, Glasgow. It will be a plain rectangular block of three stories, measuring 100 ft. by 62 ft. The lower floor, which will be partly basement, is to have a height of 12 ft., and here will be provided accommodation for forty-two joiners' benches, besides turning lathes. In another part on the same level will be a workshop in which working in iron and other metals can be taught. There will also be an engine-room with electric dynamo, it being proposed to have the building lighted with electricity. The ground floor proper will be 6 ft. above the entrance level. It will have a large room, which may be divided into three by two sliding partitions. Here engineering and weaving will be taught. The top story will consist of a suite of art-rooms, and a chemical laboratory, with lecture-room, teachers' rooms, and cloak-rooms.

PUBLIC BATHS, MORECAMBE.—Plans have been prepared by Mr. T. A. Fitton, architect, of Manchester and Morecambe, for the conversion of the ground floor of the Lyric Theatre, in Morecambe-street, into public baths. It is proposed to retain the room above as a hall in which to hold entertainments. The front entrance-hall and staircases will remain as at present. At the entrance on the ground floor an attendant's ticket-box will be provided on the left-hand side. The present double row of iron pillars in the centre supporting the floor above will be moved back to allow of a large plunge bath, 40 ft. by 25 ft., being constructed in the centre. The bath is to have a depth of 5 ft. 6 in. at the deepest end, and 3 ft. at the shallowest. On the right side of this there will be a row of eleven dressing-boxes, and on the left side and end twelve slipper-baths. Over these will be a seated balcony all round. Over this again, on the right side, will be provision for an additional row of dressing-boxes if required. In the basement, at the back, a boiler-house, laundry, and drying-room will be provided. Ante-rooms and a proscenium will be erected at the stage end. It is also intended to improve the front elevation to the street. The premises are to be warmed with hot-water apparatus throughout.

NEW HOME FOR NURSES, LIVERPOOL.—About eighteen months ago the erection of a new home for the nurses of Brownlow Hill Workhouse was commenced at the north-east corner of the present workhouse site, immediately adjoining the old building. The new structure is now almost completed. The estimated cost of the home, which will allow of the residence of sixty nurses, is 11,350*l.*, inclusive of furniture and fittings. The building, which has been designed by and erected under the supervision of Mr. Henry Hartley, architect, Liverpool, comprises basement, ground, first, and second floors. The basement contains a dining hall at the west end 51 ft. 6 in. by 29 ft. 6 in., with lavatory, cloak-rooms, and service-room immediately adjoining. At the north end of the building are the kitchen, scullery, pantries, servants' hall, and other domestic arrangements for the cooking departments and servants. On the ground floor there are two sitting-rooms, one 30 ft. by 24 ft., and the other 30 ft. by 28 ft. Arrangements have been made whereby the partition between the two rooms can be readily removed. Thus a room 52 ft. by 30 ft. can be formed for lectures or other purposes. On this floor there are also lavatories, matron's room, and eighteen

cubicles, or bedrooms. On the first and second floors there are fifty-six bedrooms, with the necessary linen closets and store-rooms. There are bath-rooms on each floor. The lavatory arrangements are confined to a sanitary tower on the south side of the building, which is practically isolated from the main building by a ventilated corridor. The general arrangement of each floor is a central corridor 6 ft. wide, with the various cubicles or bedrooms and other apartments leading off right and left. At each end of the building is a stone staircase communicating with the various floors, and approached from the hospital side by external entrance. The new home has communication on the ground and first floors with the existing nurses' home by means of a glass-covered corridor. The walls of the bath-rooms, lavatories, and domestic offices are lined with white glazed bricks. The building throughout will be heated with hot water, the heating chamber being in the lower part of the sanitary tower The whole of the premises are lighted by electricity.

CLUB ROOMS, OSWESTRY.—Additions have been made to the Oswestry Conservative Club buildings. The alterations include a new billiard-room, bar, lavatories, and alterations to the hall and card-room. The general contract was let to Mr. William Felton, Oswestry, and the seating and decorating works were carried out by Messrs. J. Jones & Son, Oswestry. The work has been carried out from the designs and under the superintendence of Messrs. Shayler & Madoc-Jones, architects, Oswestry. Mr. E. M. Gardner fitted the heating apparatus.—*Oswestry Advertiser.*

PROPOSED THEATRE, BALHAM.—A site has been secured in the Balham-road, with a frontage of 80 ft. and a depth of 150 ft., upon which Mr. W. G. R. Sprague will shortly erect a theatre. The house is to be named the Royal Duchess Theatre.

BUSINESS PREMISES, DUBLIN.—New premises for Mr. Terence Kelly have just been opened at 48, Fleet-street. The establishment is lighted by electricity. The contractors were Messrs. Kiernan, the architect was Mr. Geo. L. O'Connor, and the shop-fittings were executed by Messrs. Sage, of London, and the safes by Mr. Geo. Price, Wolverhampton.

EMPIRE PALACE AND MUSIC HALL, NOTTINGHAM.—This building has just been opened in South Sherwood-street. The scheme of decoration is Oriental in character, and Indian methods in regard to art have been largely drawn upon. The two boxes which flank the stage are surmounted by pagoda-like gilded domes, and two idols guard each side of the proscenium. The ceiling and circle fronts are treated in blue and gold. Large models of elephants' heads stand out at each corner, supporting the ceiling. Exactly in the centre is fixed a glass sliding roof. This can be removed and replaced in half a minute. The heating apparatus is constructed upon the most recent methods. There are upwards of 100 electric lights in the auditorium, most of which are in the form of "shower" electroliers. The entrances are all situated in South Sherwood-street. Stone steps lead to a lounge, which extends from one side of the circle to the other. At each end is placed a cloakroom, that destined for the use of ladies being to the right hand. At the back of the grand circle six boxes have been placed. The fauteuils are reached from the circle. Balustrades surrounds the circle, which contains six rows of seats. There are three rows of the fauteuils, and several rows of stalls. Behind the balcony is situated the gallery. There are two refreshment saloons, one for the use of the patrons of the fauteuils, stalls, boxes, and circle, and the other for the gallery and balcony occupants. A screen of frosted glass, erected on the balcony side, provides for the partial seclusion of the balcony audience. The stage is 35 ft. wide, with a 30 ft. proscenium opening. A complete instalment of gas has been laid on in the event of any mishap with the electrical plant. The dressing-rooms are ten in number. Mr. J. Greenman was resident clerk of the works for Mr. F. Matcham, the architect.

MANSION, ALLOA, N.B.—The mansion of Mr. A. P. Forrester Paton, which has been in course of construction for some time past on the rising ground to the west of the town is now completed. The building is in the English Renaissance style, and has a square tower rising to a height of 55 ft. There are within the grounds conservatories, gardener's house, coachman's house, coach-houses, &c., also an ornamental lake. The architects were Messrs. Sydney Mitchell & Wilson, Edinburgh, and the various works have been carried out by Mr. Gordon, clerk of works. The contractors were:—Builder, Mr. Philip, Tillicoultry; joiners, Messrs. H. T. & R. Montgomery, Edinburgh, and for oak work, Messrs. Anderson & Sons, Glasgow; plasterer work, Mr. J. Walker, Alva; plumber work, Mr. J. Philip, Alloa; slater work, Mr. M'Farlane, Alloa; painting work, Messrs. Moxen & Carfrae, Edinburgh; electricians, Messrs. Maver & Coulson, Limited, Glasgow; contractors for conservatories, Messrs. Mackenzie & Moncur, Edinburgh.

LIBERAL CLUB, BIRKENHEAD.—On the 5th inst. the foundation stone of a new Liberal Club was laid at Birkenhead. The club, which is situated in Claughton-road, will contain reading-rooms, reception-room, committee-rooms, a billiard-room with three tables, and a meeting hall to hold about 400 persons. Mr. Thomas Cook is the architect, and Mr. P. Rothwell the contractor for the building.

CLUB HOUSE, LYTHAM, LANCASHIRE.—The new club house of the Lytham and St. Anne's Golf Club was opened on the 5th inst. The building has been erected from the design of Messrs. Woolfall & Eccles, of Liverpool, and has cost approximately 8,000*l.* The house comprises entrance hall, locker-rooms, club-rooms, dining hall, ladies' club-room and dressing-rooms, billiard-room, baths, lavatories, offices, and steward's service.

CO-OPERATIVE STORES, WATFORD.—New stores have been erected in St. Albans-road by the St. Andrew's Co-operative Society. The buildings, which cover a frontage to the St. Albans-road of about 51 ft., and a depth of about 110 ft. to Hatfield-street, comprise a basement about 50 ft. by 30 ft., with furnace-house, &c. On the ground floor are two shops, scullery, main entrance, with side entrance in Hatfield-street. The first floor comprises hall, about 40 ft. by 30 ft., approached from the ground floor by main staircase and landing, and staircase from side entrance. There are also a secretary's office and committee-room on the first floor. The work has been carried out by Mr. Charles Eames, of Watford, under the superintendence of Mr. C. P. Ayres, J.P., architect.

VOLUNTEER MEDICAL STAFF CORPS, LEEDS.—The new headquarters of the Volunteer Medical Staff Corps, just opened, consist of a drill hall, staff offices, orderly offices, clothing stores, and residence for staff sergeant, with the rear portion of the site reserved for the erection of a model hospital in the near future. The work in connexion with this corps has been carried on by Surgeon-Captain de Burgh Birch from its formation. The new buildings have been erected from plans prepared by Mr. William Bakewell.

NEW UNDERGROUND CONVENIENCES AND LAVATORIES, SHOREDITCH.—These conveniences, at High-street, opposite Shoreditch Church and New North-road, by East-road, have been constructed for the Vestry at a total cost of about 4,100*l.*, by Mr. George Jennings, sanitary engineer, of Lambeth, under the direction of the Works Committee and the Surveyor. That in Shoreditch High-street is triangular in form, being 40 ft. long by 40 ft. extreme width, the floor level being about 10 ft. below the carriage-way. The internal fittings are of the latest type, the urinals being Redhill "Radial" stalls, and the water closets of Jenning's special Midland pattern. Three lamp columns serve as ventilators to the drains. The convenience will be lighted by electricity, a gas supply being also supplied for emergency. The cost has been 2,450*l.* That in the New North-road is 31 ft. long by 24 ft. wide at one end, and 9 ft. wide at the other end. There are two lamp columns serving as ventilators to the drains; this convenience will also be lighted by electricity (with gas supply if required). The cost was 1,650*l.* Both conveniences are ventilated by "Blackman's Air Propellors," the fans being driven by water power, the air discharging into the shafts of the lamp columns. The waste water from the ventilating fan is re-used for flushing the urinals, &c. The floors are paved with black and white tiles. The divisions between waterclosets, &c., are of marble, and the whole of the woodwork used is teak. The roofs are constructed of glazed lights, with rectangular lenses, fixed upon granite kerbing, which is carried by steel girders. The drainage has been carried out in the most perfect manner and subjected to severe tests. All the pipes are bedded in and covered with concrete, each main chamber being intercepted from the main sewer and the whole system amply ventilated. Every section of the drains can be separately examined, tested, and cleansed by means of inspection eyes at various points. Access chambers with white glaxed inverts are provided at all intersections, these being covered with double-sealed and tiled covers at the floor level. The work has been carried out for the contractor by Mr. G. B. Davis.

SANITARY AND ENGINEERING NEWS.

SEWERAGE OF LEIGH-ON-SEA.—Mr. E. Bailey Denton (Bailey Denton, Son, & Lawford) has been instructed by the Urban District Council of Leigh-on-Sea to report to them as to the best means to be adopted for the sewerage and sewage disposal of their district. Since the provision of a public water supply and the development of several estates within the parish, the population has greatly increased, and a proper system of sewerage has become a matter of necessity. Leigh is the last town on the Essex side of the River Thames within the jurisdiction of the Conservancy Board, and is immediately above Southend, where the Council, on the advice of Mr. James Mansergh, have recently spent a large sum of money upon sewerage. The method of sewage disposal, therefore, which will ultimately be adopted at Leigh is a matter of great interest to other towns situated within the tidal reaches of the Thames.

SEWAGE WORKS, WEST BROMWICH.—On the 3rd inst. Colonel W. R. Slacke held a Local Government Board inquiry at the Town Hall, West Bromwich, concerning the application of the Town Council for sanction to apply 3,500*l.* of the balance of loan raised by them for works of sewerage and sewage disposal in defraying the cost of certain works of sewage disposal. Mr. Caddick, Town Clerk, explained that the amount expended in the work was 113,422*l.*, leaving a balance in hand of 9,461*l.* From that had to be deducted 5,300*l.* for work not yet carried out, leaving a balance of 4,161*l.* They wanted filter beds to be so constructed, on the biological system, that if they had to resort to chemical treatment they would be available for that purpose. It was proposed to put down two filter beds on the low level system, at an estimated cost of 1,000*l.*, and one on the high level at a cost of 500*l.* It was also proposed to spend 2,000*l.* for the underdraining of certain areas of the sewage farm. The total expenditure of the work when carried out in its entirety would be about 14,000*l.*—Mr. A. D. Greatex, Borough Surveyor, said he was formerly surveyor and engineer to the Sutton and Surrey District Council, where the biological system had been successfully carried out.

WATER SUPPLY, FINEDON.—At a recent meeting of the Finedon Urban Council, Mr. Donald reported that the General Purposes Committee had had the question of providing the town with a proper water supply before them at a special meeting, and their recommendation to the Council was that the scheme put forward by Messrs. Mosley & Anderson, of Northampton, should be adopted, and that it be proceeded with at once. Messrs. Mosley & Anderson's estimate of their scheme was 6,500*l.* He proposed that the Council accept that scheme. The Council adopted the General Purposes Committee's recommendation.

SANITATION AT NICE.—We are informed that since the controversy two or three months ago as to the sanitary condition of the environs of the Regina Excelsior Palace Hotel at Nice, where the Queen usually resides when visiting Nice, new sanitary works have been carried out, under the direction of Mr. Hugh Smith, C.E., of Nice, throughout the house and grounds, on the same lines as at the Grand Hotel Cimiez, where the Queen stayed the two previous years.

PORT VICTORIA PIER.—The South-Eastern Railway Company have completed the reconstruction of Port Victoria pier, the terminus of the Hundred of Hoo branch, which was temporarily closed for traffic in October, 1896, on account of the structure being considered unsafe to bear the strain of trains. The pier has been strengthened by the addition of 324 new piles, the largest of them being 70 ft. long and 17 in. square. The piles on the river side of the pier have been left standing 6 ft. above the deck level, in order to prevent the sponsons of Royal yachts from settling on the edge of the pier when lying alongside at high water. The whole of the old piles have been left in, the new piles being driven alongside of them and being bolted to them by 1¼ in. bolts. To prevent the inroads of the "teredos," popularly known as shipworms, which have eaten away the old piles in such a remarkable manner, the new piles have been sheeted with copper for a height of 4 ft. above mud level. The plan of the superstructure—platform and buildings—has been entirely altered, the rails being now laid on the inner side of the pier, facing the Isle of Grain. A covered way has been provided for the convenience of Royalty arriving or disembarking, and the length of the platform has been extended to 500 ft. The works have been carried out by Messrs. John Aird & Sons, of Lambeth. The South-Eastern Company's service with the Isle of Sheppey cannot be resumed until the rebuilding of Sheerness pier, which was partially destroyed in the gale of November 29 last.—*Times.*

STAINED GLASS AND DECORATION.

WINDOWS, ST. MARK'S CHURCH, LOWMOOR.—Three stained glass windows have just been placed in St. Mark's Church, Lowmoor. The subjects represented are the Holy Family, Ruth, and Dorcas. The work is from the studio of Messrs. Abbott & Co., of Lancaster.

DECORATION OF CONGREGATIONAL CHURCH, FREEMANTLE, HANTS.—This church, situate at the corner of Albert-road, and facing Shirley-road, after having been closed for several weeks to admit of the decoration of the interior of the structure and the erection of a new pulpit, has been re-opened. The decorative work has been carried out under the direction and supervision of Messrs. Mitchell, Son, & Gutteridge, architects, of Southampton.

FOREIGN.

FRANCE.—Mdme. Lemaire, well known at the Champ de Mars salons as a flower and fruit painter, has been appointed Professor, at the Natural History Museum, of design based on the study of plants. ——The Municipal Administration of Paris intend shortly to light the Bois de Boulogne with electric light, commencing with the Alley of the Porte Dauphine, the circumference of the lakes and La Muette. The roads leading to the Pont de Suresnes will be subsequently taken in hand, and next the Jardin d'Acclimatation and the Allée de la Reine Marguerite. —— The Government has under consideration a scheme for arranging the Pavillon de Flore as a palace for the reception of royal personages who may visit the 1900 exhibition.——M. Daumet, the architect in charge of Chantilly, has informed the Institute that the galleries of the museum and library at Chantilly can be opened to the public

from April 5.——On April 26, the centenary of the birth of Delacroix, the monument erected to his memory by the Conseil Général, at St. Maurice, will be inaugurated. The architectural part of the monument is the work of M. Lequeux.——The municipal council of Toulon has rejected the scheme for the sanitation of the town, which had been under consideration for six years past.——M. Paul Favier, architect, of Versailles, has been elected President of the Société des Architectes de Seine-et-Oise for the present year, and M. Naquin de Lippens has been elected President of the Union Architecturale of Lyons.——The jury of the competition opened for the erection of schools at Agen has awarded the first premium to M. Bourgeois, architect, of Poissy, and the second to M. Caslon, "constructeur," of Agen.——The death is announced, at the age of sixty-eight, of M. Ernest Baril, formerly architect to the Compagnie Générale de Omnibus of Paris. M. Baril had been joint architect with M. Brunet-Desbaines in various works in the town of Havre, especially the Hôtel de Ville and the Sous-Prefecture. Some iron constructions of considerable importance which he had carried out led to his being elected, in 1879, a member of the Société des Ingénieurs Civils. He also became a member, in 1876, of the Société Centrale des Architectes.

GERMANY.—Some time back we referred to the considerable improvements proposed at Munich, near the old Hofgarten. The design was by an architect, Herr Otto Lasne. We understand that the scheme is to be carried out as soon as possible. ——The result of the annual Schinkel competition under the auspices of the Architektenvrein has been announced, and Herr S. Mueller, of Berlin, takes the first premium on the civil engineering side. There were thirteen competitors.——We understand that the Government of Saxony will erect an electric light station as well as a heating station to supply the various Government and Court buildings which are near the Zwinger. The former station is estimated to cost 35,000*l.*, and the latter 50,000*l.*, but a considerable economy is expected, as each of the buildings has its own machinery at the present time.

A NEW HARBOUR FOR CHRISTIANIA.—An important international competition has been opened at Christiania for some new harbour works and embankments. The conditions for the competition seem to have been well thought out. The premiums are 10,000, 5,000, and 3,000 crowns respectively, and there will be a board of nine assessors, of whom six are laymen and three members of the technical professions. Of the latter, one is a German (Herr Franzcius, of Bremen), one a Dane (Herr Moeller, of Copenhagen), and one a Norwegian, *i.e*, the City Engineer of Drontheim. The new harbour works will extend from the old King's Harbour to the Bay of Frognerkilen.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS. —Mr. Herbert Ibberson, architect, has removed from 5, Adelaide-place, London Bridge, to 28, Martin's-lane, Cannon-street, E.C.——Mr. B. Nowell, of the former firm of Nowell & Robson, stove merchants, &c., Warwick-road, Kensington, has taken into partnership his sons, Mr. Harry Nowell and Mr. Frederick Nowell, and the business will be carried on under the form of B. Nowell & Co.—— Messrs. T. & R. Boote, of the Patent Tile Works, Burslem, have removed their London office from Waltham Buildings to Birkbeck Bank Chambers, Southampton-buildings, Holborn, E.C.——The partnership between A. H. Batley and A. W. Linfoot, as builders, of 42, Birdhurst-road, Croydon, has been dissolved by mutual consent.

COATS MEMORIAL STATUES, PAISLEY. — The statues of the late Mr. Thomas and Sir Peter Coats were unveiled at Paisley on the 26th ult. In his treatment of the statues, Mr. Rhind shows Sir Peter, who was very active in his habits, with his frock coat thrown back by the left hand, the right hand grasping the lapel below the collar, while Mr. Thomas is placed in a reposeful attitude, his frock-coat buttoned, and over it his top coat. The pedestal of the Sir Peter statue is square. There are pillars at the corners, and niches with panels on each of the four sides, and on these are placed symbolic figures representing "Frugality," "Industry," "The Arts," and "Literature." The pedestal of the Thomas Coats statue is of white marble, almost circular in form, and the panels, with symbolic figures in bas relief, represent "Prudence," "Perseverance," "Liberality."

ELECTRICAL DIRECTORY.—*The Electrician* Electrical Trades' Directory for 1898 is a carefully compiled and thoroughly trustworthy book. A great deal of interesting and important matter for electricians is included in it which it is difficult to find elsewhere. We may mention specially a digest of the law of electric lighting, a description of the many sliding scale systems adopted in charging for the electric light, and diagrams of lamp connections as deserving of praise. Large sheet tables are included, giving full particulars of the electricity supply stations and the electric tramways in the United Kingdom. These tables are most useful for hanging up in central stations, electrical engineers and contractors' offices, &c., as they give at a glance all the information required for statistics and technical data. The only part of the book which disappoints us is the biographical portion at the end. We miss notices of such eminent electricians as Lord Crawford, Steinmetz, and Glazebrook, but come across long accounts of various amiable and deserving electricians who can hardly be described as eminent. A strict editorial revision of this part of the book is necessary. This, however, is a small point, and, taken as a whole, the directory is a valuable guide and a most useful book of reference for all connected with the electrical trades or interested in the applications of electricity.

COLOURED FRIEZES FOR ROOMS.—Messrs. Wylie & Lochhead send us some chromo-lithographic reductions of wall-paper friezes, designed for them by Mr. Arthur Gwatkin and Mr. F. Hamilton-Jackson. They are well produced, and have a very good effect. The two best are the "Iris" frieze and the "Poppy" frieze, in which the lines are more free and the treatment broader than in the two chrysanthemum friezes, which contain rather too many thin lines, though meritorious in other respects.

MEMORIAL STATUE, MANCHESTER.—It is proposed to unveil the statue to the late Mr. Ben Brierley, in Queen's Park, Manchester, about the middle of next month. The statue will be 7 ft. 8 in. in height, and the pedestal and base 9 ft., a total of 16 ft. 8 in. A full-size clay model, which the committee have already seen and approved of, has been prepared by the sculptor, Mr. John Cassidy, of Manchester.

ELECTRIC LIGHTING, SUNDERLAND.—The Lighting Committee of the Sunderland Corporation have had presented to them a report with regard to the electric lighting of the town. In this the Electrical Engineer (Mr. Snell) states that the demand is increasing so rapidly that further extensions are necessary. He estimates that to meet the requirements up to 1901, 12,728*l.* would be required for buildings, boilers, and dynamos, tools, &c., and a further 12,540*l.* for mains and such like. The immediate requirements would be met by the sum of 7,800*l.* Mr. Snell suggests that application should be made to the Local Government Board for leave to borrow not less than 25,000*l.* With this sum it is thought that all the districts in the borough can be brought within the area served by the light.

NORTHAMPTON INSTITUTE. — The "Announcements" publication of this Institute shows a remarkable programme of technical and industrial education. In the preface, giving the outline of work, it is remarked that the modern constructive and artistic crafts employ in their processes so many methods derived from widely different sources, and use the principles developed in so many branches of natural science, that scarcely a single trade can be found which does not demand from an intelligent craftsman or journeyman, if he is to understand his daily work, a clear knowledge of fundamental principles drawn from more than one science. Fortunately, in many cases, the principles referred to are not very abstruse, and can be easily grasped by a man of ordinary intelligence who is willing to devote the necessary time to the study. For the guidance of such, a table has been compiled to enable the workmen engaged in the various trades specified to ascertain readily the Institute classes which they should attend, in addition to those more immediately dealing with their particular trades. The courses have been arranged specially for the benefit of the artisans, apprentices, and others engaged in the Clerkenwell trades. It has been assumed that an earnest student will be willing to devote three or, in some cases, four nights a week to study during the winter months, and the table will show him how to make the best use of his time.

GREYFRIARS CHURCH, ABERDEEN.—A suggestion put forward as a solution of the present difficulty with regard to the completion of the Marischal College Extension Scheme, Aberdeen, is that Greyfriars Church should be retained on its present site and restored—not as a building for academic purposes, but as a church. The building would front Broad-street. According to a design by Mr. Marshall Mackenzie, A.R.S.A., a new aisle would be constructed along the east side of the church in order to bring the building into closer resemblance to the church as it existed originally. According to the *Aberdeen Free Press* the adoption of this scheme would obviate the necessity of erecting the proposed new church and would also leave in the hands of the authorities a very valuable asset in the shape of the site of the proposed building. It has been urged that there might be a difficulty in carrying out this scheme owing to the obligation undertaken by the Town Council to build the new church. This, however, is not so. It would be perfectly competent, it is contended, for the minister of Greyfriars, the kirk session, and the Presbytery to discharge that obligation, and so allow the present building to be retained and devoted to its present and historic use as an ecclesiastical building.—At a meeting of the Finance Committee of Aberdeen Town Council on the 3rd inst., Lord Provost Mearns read extracts from letters received on behalf of the person who has offered, on certain conditions, to give 10,000*l.* to the University Extension Scheme. One of the conditions is that the old Greyfriars Church must be retained, and the Committee decided some time ago to endeavour to got this stipulation modified, but the correspondence submitted was to the effect that the person who made the offer was determined that the retention of the church shall be an absolute condition of the gift being given. The committee did not take up consideration of the matter, as they are to meet subsequently the University Court to discuss the whole subject.

ANCIENT MONUMENTAL BRASSES.—In the Chemical Theatre of the Technical School, Blackburn, recently, Mr. T. Harrison Myres, of Preston, lectured on "The Monumental Brasses of the District," the word "district" covering the two counties of Lancashire and Cheshire. The lecturer pointed out that ancient monumental brasses are not without their counters in modern art. The coffin plate and the door plate are their lineal descendants. At the present time there are only 4,000 brasses in churches in England, and these are mostly in the South country. No fewer than 8,000 brasses have been stolen or destroyed, and lost for ever. The counties of Lancashire and Cheshire have not many brasses, and those that they have are mostly poor in character. Such had been the shameful destruction of these beautiful memorials of the dead in the churches in the preceding reign, that Queen Elizabeth issued an edict against the vandalism that prevailed. But the greatest destruction took place a hundred years after this, in the time of the Revolution. Brasses were not made in England until the time of Queen Elizabeth. In all there were twenty-five ancient brasses in churches in Lancashire, and twenty in Cheshire. The brasses in Winwick Church were very fine. In Whalley Church there was a brass in memory of Sir Ralph Catterall and his wife. The design was similar to that of Henry Norris and his wife at Winwick, the costumes being almost identically the same. The migrations undergone by some brasses were very remarkable, as, for instance, one that formerly belonged to Preston Parish Church, and had been discovered in the Isle of Man. He had discovered no fewer than seventeen valuable brasses hidden away on a shelf under a staircase in Lancaster Parish Church. The brasses of the Assheton family in Middleton Church were very excellent, and well worth a careful inspection. The lecturer concluded his remarks by an account of the difficulty he had experienced in procuring a rubbing of the brass of the founder of Manchester Cathedral, which he found hidden away in the crypt, and by stating that the object of his lecture was to secure the preservation of such of these interesting monuments in their churches as were still left to them. The lecture was illustrated by a large number of rubbings and diagrams.—*Blackburn Standard.*

RESISTANCE OF MATERIALS TO FIRE.—A Committee of the "Kent and Essex Brickmasters' Association" have been making an examination of the effect of the fire on the various materials in the houses destroyed in the Cripplegate fire, and have issued a short report on the subject. The following is their statement as to the condition of the various materials examined :

"1. Ordinary stock building bricks, quite uninjured.
2. Perforated bricks, broken to pieces, and where they were used for outside facing the front face was gone, and the perforations exposed.
3. Blue bricks, faces gone.
4. Red bricks, faces gone and destroyed.
5. Stone, cracked and destroyed.
6. Iron girders, mostly twisted and curled up.
7. Wooden beams, charred, but practically otherwise uninjured.
8. Match-boarding used for panelling the walls, burnt to tinder."

They add that they think the conclusion to be drawn from the action of this fire upon the brickwork is that the stock bricks, although not even of the best quality, were quite unaffected, and they attribute this to the fact that stocks, from the large amount of silica in the brickearth from which they are made and from the mode of manufacture, are of the nature of a fire-brick. Bricks made purely of clay, and especially when made by machinery, were not so able to resist the action of fire. The report is signed by Messrs. A. Rutter, G. H. Dean, G. E. Wragge, H. Packham, and E. W. Goodenough.

INTERNATIONAL EXHIBITION, MADRID.—We are asked by the Spanish Chamber of Commerce to call attention to this exhibition, which will be held at Madrid from April 10 to July 10, and which is organised in connection with the International Congress of Hygiene and Demography. The exhibition will include among its subjects "Urban Hygiene," "Hygiene in Relation to Dwelling Houses," "Demography and Statistics," &c. Exhibitors will enjoy the following privileges :—No charge for spaces occupied at the exhibition ; the goods will be imported into Spain free of Customs duties ; the railways of Spain will make a reduction of 50 per cent. from their tariff for carriage. Travellers attending the Congress will enjoy the following advantages : The Spanish railway will reduce the price of the tickets by 50 per cent. ; the Compania Transatlantica Espanola (Steamship Company) also make 50 per cent. reduction on their return tickets to Spain, and travellers are entitled to attend the excursions, receptions, and amusements prepared or which will be given in connection with the said Congress, among which will be one at the Royal Palace of Madrid, and one at the Palace of the Municipality.

BUILDING TRADES EXCHANGE, NEWCASTLE.—On the 4th inst., at the Douglas Hotel, Newcastle, a meeting was held to consider the proposal for establishing a Building Trades Exchange for Newcastle, Gateshead, and district. Mr. J. G. Walker presided, and amongst those present were Colonel Bennett

(President of the Glasgow Exchange), Mr. David Cook (secretary, Glasgow Exchange), and others. The Chairman briefly indicated how the proposal came about. A meeting was called, and as a result a deputation visited Glasgow. At another meeting the deputation presented a report, in which they said they were satisfied that the exchanges at Glasgow and Edinburgh were a distinct success, that they would strengthen and concentrate the various trades and professions connected with building, and encourage and promote and protect the interests of the trades in many ways.—Colonel Bennett then read a paper sketching the character of the building exchanges he had visited in America. He said he had come to the conclusion that these might be advantageously introduced into this country. At Glasgow they had proved the possibility of their existence. The American builders, believing that more intimate social relations and acquaintance with each other would tend to check the bitterness of rivalry and keep the eagerness of competition within reasonable limits; and that in this way the skill and knowledge of each member would in a great measure be acquired by all, and their usefulness to the community in which they lived increased, formed themselves into associations which had gradually grown into the building exchanges. These institutions would be found to exist in every large city. Their objects were the encouragement and promotion of the building interests; the inculcation of just and equitable prices; the establishment and maintenance of uniformity in commercial usages; the acquirement, preservation, and dissemination of valuable business information; the adjustment as far as practicable of controversies and misunderstandings which were apt to arise between individuals engaged in a trade when they had no acknowledged rules to guide them; and by the membership to give assurance to the public of skill, honourable reputation, and probity. Taking the Philadelphia institution as a model, Colonel Bennett described how those engaged in the trades had specified hours for meeting each day at the exchange; how in this way much valuable time could be saved; and went on to detail the equipment of the exchange with its telephone and telegraph service, the new-rooms, lockers for members, &c. After pointing out how the material interests of business could be benefited by the exchanges, he urged that they should take their rightful place in the professions and callings of the country. They would not then have co-operative stores and municipalities running into gigantic building speculations to teach them the business of their lives, which they (the co-operators and municipalities) felt quite competent to deal with after having had a few months or so in a City Council. Dealing with the uniformity of contract question, he said that whilst the Americans did not claim to have devised a perfect contract, they did say they had made a great advance on anything there was in this country by at least fifty years. He predicted that the exchanges would have the effect of bringing the competent men to the front and sending the laggards to the wall. The exchanges would soon put an end to all shoddy work and shoddy work prices. Besides this, the public would have more confidence in the tradesmen they employed, and a better feeling would be established between architects, surveyors, and tradesmen. Speaking of the Glasgow Exchange, he pointed out that at the end of its second year it was perfectly solvent. It had gained favour with many architects and surveyors; their sample rooms were already well filled; clients as well as buyers and sellers took advantage of their rooms; all their trade meetings were held there, and it was known as a centre.—Mr. Cook gave details of the initiation and management of the Glasgow Exchange, and said it was recognised as an important factor in building matters. In cases of irregularity or grievances, where an individual protest was unsuccessful, action by the Exchange was generally effectual.—Mr. John Ferguson, who thought that the scheme was well worth a trial, moved that a Building Trades Exchange for Newcastle, Gateshead, and district should be formed. This was seconded by Mr. W. L. Newcombe, and carried unanimously. A committee was afterwards elected.

WOOD PAVING AT NEWPORT.—Mr. R. H. Bicknell, one of the Local Government Board inspectors, held an inquiry on the 4th inst., at the Town Hall, Newport, as to an application by the Corporation of Newport for sanction to borrow 5,000*l.* for the paving with wood blocks of the remainder of High-street (the eastern end) and of Commercial-street. The Town Clerk (Mr. Newman) and the Borough Surveyor (Mr. Haynes) were present.

BUILDING TRADES EXHIBITION, MANCHESTER.—The opening of this exhibition, which had been fixed for April 18, is postponed to June 20, in consequence of the request of several exhibitors for more time.

CAPITAL AND LABOUR.

BUILDING TRADE, BRISTOL.—Various branches of the building trades in Bristol have issued notices asking for an advance of wages and a reduction of hours, to come into operation on the first of July next.

WAGES IN THE BIRMINGHAM BUILDING TRADE.—In accordance with the agreements existing between the various sections of the building trade and the Master Builders' Association to the effect that six months' notice shall be given on either side for the alteration of rules, the scale of pay, &c., the representatives of the carpenters, plasterers, masons, plumbers, scaffolders, and labourers gave notice in October last of their intention to claim an increase of wages dating from April 1 next. In the case of each of the skilled branches the increase asked for is at the rate of one penny per hour, whilst the labourers and scaffolders ask for one halfpenny per hour. Notices were also given by the men of certain alterations desired by them in the rules. Since October several meetings have been held to discuss the situation on both sides, and, owing to the abnormal briskness of the building trade, the operatives have been encouraged to enforce their demands in their fulness. In view of the fact that the granting of the increases asked for would mean an enormous difference in the profits on existing contracts, the employers considered that the offer of an advance of one halfpenny per hour, to come into operation in April, 1899, would be fair; whilst, on the other hand, the operatives have decided that if the halfpenny is granted for the current year they would accept such a settlement as satisfactory now. The latter proposition has not yet been discussed by the masters, and, until they have dealt with it, it cannot be forecasted whether or not friendly relations will be maintained between employers and employed.—*Birmingham Post.*

DISPUTE IN THE BUILDING TRADE AT LINCOLN.—Some time ago—on February 1—the Lincoln joiners, bricklayers, and plasterers demanded an extra 1d. per hour (the prevailing rates for joiners and bricklayers being 7½d., and plasterers 8d.) and an alteration of the rules. The masters, in reply, offered an advance of ½d. per hour without mention of the rules as to apprentices, and to this offer, it is stated. no reply has been received, though the general belief is that it will be accepted.

LEGAL.

ALLEGED OBSTRUCTION OF ANCIENT LIGHTS AT SOUTH TOTTENHAM.

THE case of A. J. Moore *v.* Thorpe and Payne, and T. D. Moore *v.* the same, came before Mr. Justice Romer, in the Chancery Division, on the 3rd inst. Mr. Ashton Cross, on behalf of the plaintiffs, said they were actions brought by two brothers by reason of a building being erected which interfered with the light and air of certain houses belonging to them. For all practical purposes both cases might be treated as one. The plaintiffs were the owners of long leasehold houses situate in Richmond-road, St. Anne's-road, South Tottenham. The first four houses in Richmond-road were the houses belonging to his clients, and formed the subject of the action. The lease of those houses was granted in September, 1875, the houses being completed at the beginning of 1876, and were assigned to the father of both the plaintiffs. The father died in 1889, and left his sons the houses, two to each of them. What the plaintiffs complained of was the erection of a wall by the defendants which obstructed the light at the back of the plaintiffs' premises. Mr. Payne was the freeholder, who granted a license to Thorpe on Aug. 14, 1896, to erect the building complained of, and he (Mr. Cross) should submit that the licensor and licensee were both liable. Complaints had been made by the plaintiffs about the interference with their light, but no notice was taken of their complaints for some time.

In giving judgment his Lordship said he thought there had been a substantial interference with the light to the windows of the wash-houses of Nos. 3 and 5, Richmond-road, but it was not, to his mind, a case for a mandatory injunction. He thought damages would be perfectly adequate. He assessed the damage to No. 3 at 30*l.*, and to No. 5 at 20*l.* The defendants would have to pay the costs of the action, except so far as the costs were increased by the claims in respect to the houses Nos. 1 and 7, in respect of which, to his lordship's mind, no substantial damage was established. Judgment accordingly.

MEETINGS.

FRIDAY, MARCH 11.

Architectural Association.—Mr. Hippolyte J. Blanc on "Scottish Ecclesiastical Architecture in the Fourteenth and Fifteenth Centuries." Illustrated by lantern views. 7.30 p.m.

Institution of Civil Engineers (Students' Meeting).—Mr. H. C. Adams on "The Drainage of Cottage Property." 8 p.m.

SATURDAY, MARCH 12.

Architectural Association.—Spring visit, to the new Public Baths, New Cross-road. 3 p.m.

Institution of Junior Engineers.—Conversazione, at Westminster Palace Hotel.

Sanitary Institute (Demonstrations for Sanitary Officers).—Inspection at Friern Barnet Sewage Works. 3 p.m.

Edinburgh Architectural Association.—Visit (1) to the Leith Academy, Leith Links; (2) Old Leith.

Perth Architectural Association.—Visit to the New Post-office. 2.30 p.m.

MONDAY, MARCH 14.

Carpenters' Hall, London Wall (Free Lectures on Matters Connected with Building).—Professor Banister Fletcher on "Architecture *versus* Building." With lantern illustrations, &c. 8 p.m.

Society of Arts (Cantor Lectures).—Professor W. N. Hartley on "The Thermo-Chemistry of the Bessemer Process." I. 8 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Lecture by Dr. A. Hill. 8 p.m.

Bristol Society of Architects.—Mr. G. C. Lawrence on "Architectural Photography." 8 p.m.

TUESDAY, MARCH 15.

Institution of Civil Engineers.—Mr. Henry Fowler on "Calcium Carbide and Acetylene." 8 p.m.

WEDNESDAY, MARCH 16.

Society of Arts.—Mr. Clayton Beadle on "The Recent History of Papermaking." 8 p.m.

Sanitary Institute (Demonstrations for Sanitary Officers).—Inspection at the L.C.C. Common Lodging House, Parker-street, Drury-lane. 3 p.m.

Builders' Foremen and Clerks of Works Institution.—Ordinary meeting of the members. 8 p.m.

Edinburgh Architectural Society.—Mr. T. Kershaw Bonnar on "Ecclesiastical Decoration." 8 p.m.

British Archæological Association.—Mr. Allen S. Walker on "The Screen of All Hallows the Great." 8 p.m.

THURSDAY, MARCH 17.

Royal Institution.—Professor J. A. Fleming on "Recent Researches in Magnetism and Dia-magnetism." III. 3 p.m.

Society of Antiquaries.—8.30 p.m.

Institution of Civil Engineers (Special Meeting).—The sixth "James Forrest" Lecture, by Prof. W. Boyd Dawkins on "Geology in relation to Engineering." 8 p.m.—Students' visit to the ventilating, heating, lighting, and drainage arrangements of the Houses of Parliament. 11 a.m.

Sanitary Institute (Lectures for Sanitary Officers).—Lecture by Dr. H. R. Kenwood. 8 p.m.

FRIDAY, MARCH 18.

Royal Institution.—Mr. James Mansergh on "The Bringing of Water to Birmingham from the Welsh Mountains." 9 p.m.

SATURDAY, MARCH 19.

Institution of Junior Engineers.—Visit to Messrs. J. & E. Hall's Refrigerating Machinery Works, Dartford. 3.30 p.m.

Sanitary Institute (Demonstration for Sanitary Officers).—Inspection at Harrison & Barber's Knacker Yard, Winthrop-street, Whitechapel. 3 p.m.

Perth Architectural Association.—Visit to Edinburgh.

RECENT PATENTS:

ABSTRACTS OF ACCEPTED SPECIFICATIONS.

Open to opposition until April 16.

[1897.] 4,091.—BRICKS OR BLOCKS FOR USE IN CONSTRUCTION: *J. C. Granderath & Co.*—The bricks or blocks, composed of artificial stone, beton, tuff, or other suitable concrete, and of a height of two or more courses, are fashioned with perforations, projections, grooves, or feathers, for engagement with one another and the adjoining masonry, in the construction of flues, chimneys, and other shafts.

4,206. BALL CASTORS: *A. F. Hawkesley.*—The castor has a number of lugs, or brackets, cast inside the socket or cup, enclosing the ball, against which the annular axles rest, and by which the axles and anti-friction rollers or discs are held in position.

5,617. APPARATUS FOR KEEPING DRY THE INTERIOR OF PIANOFORTES, ORGANS, AND OTHER ENCLOSED CHAMBERS: *Tanner & Winter.*—A receiver made of glass and other material is divided into two chambers by a perforated drainage plate, whose edges are covered with a non-resonant material; hygroscopic salts are placed in the upper part of the receiver, and the liquid resulting from deliquescence trickles through the drainage plate into the bottom portion.

6,358.—HAND-DRILLING TOOLS: *A. A. Tattersall.*—The novelty lies in the use, in conjunction with a speed drill of a short auxiliary spindle adapted at one end to screw into a hole made in the drill spindle and provided at the other end with a centre and a removable breastplate; the tool can be used alone with a breast, lever, or screw feed, and also in combination with a crank brace and a ratchet.

6,512.—VENTILATING THE ROOFS OF STABLES, COW-HOUSES, &C.: *H. Green.*—Thin slabs or boards are attached to the rafters or timbers supporting the slating, and in the space between the slabs and the slating, forming an "underdrawing," is packed hay, sawdust, straw, or chaff, for excluding cold air; bell-mouthed shaped tubes, provided with shutters or slides, allow the escape of air from within; fresh air is admitted by grids in the outer walls, communicating with tubes inside.

6,547.—SUPPLY PIPE OR RISING MAIN: *Luftdruck-Wasserhebungsgesellschaft Krause & Co.*—The pipes or mains for use with apparatus for raising liquids by compressed air are curviform or corrugated in longitudinal section, so that the masses of liquid in the supply pipes may produce curves of fall, whereby the velocity of the fall of the mass is diminished, and larger areas of action are presented to the compressed air which effects the raising.

7,201.—SOCKET JOINT OR COUPLING FOR RODS, &C.: *J. Ephraim.*—To prevent the set screw (of his former patent) from becoming detached from the joint, the inventor recesses that part of the joint which receives the set screw and forms the recess with an undercut; then, having inserted the set screw, he expands its lateral wings under the undercut portions, which are high enough to allow space for the rising of the screw in order to release the joint.

8,493.—COMBINED RULE AND SQUARE: *Hopton & Maxwell.*—The rule is made in sections or lengths, one section has a spring tongue for engagement with notches formed in the end and side of the other section, so that the rule can be converted into a square, or folded to half-length.

8,954.—JOINTS FOR LINED PIPING: *A. Clarke.*—The improved joining piece comprises a non-corrosive hollow metal lining, which has a non-conducting section around the middle portion thereof on the junction, and a metal shell or casing cast or moulded around the non-conducting section; the joint is particularly intended for tin-lined lead piping, wherein a section of non-conducting material is placed between the tin lining and the lead or like soft metal outer pipe or casing; the jointing-piece is made in T, or X, or other shape, with the outside lining of asbestos or other non-conductor.

25,946.—A DOUBLE CRANE FOR BUILDING AND OTHER PURPOSES: *B. Kotz.*—The double lift or travelling-crane has an iron frame with two drums moved by a single crank mounted in the middle axes of the frame, so that when the first weight is lifted the other is lowered.

27,698.—WALL PLUGS: *Udall and Others.*—In order to determine the precise positions of the holes that are required to be bored for the screws in the wooden casings for wires, &c., a marker is inserted in the screw-hole of the metallic plug; for affixing wooden casing to brick or stone walls, a plug is used which has its front or face side formed with sharp points at the angles, or with a sharp circular edge.

28,968.—ROOFS: *W. J. Woods.*—The object of the invention is to provide a roof whose corners or angles shall be of diamond shape or form, by cutting away the corners or angles of the frame of the building, and placing thereover a diamond-shaped frame consisting of a central rafter to which are secured parallel rafters projecting down and out, and with their lower ends resting upon, and secured to, inclined plates.

30,143.—CONSTRUCTION OF JOISTS, GIRDERS, &C., OF CEMENT STRENGTHENED WITH IRON OR THE LIKE: *F. Hennebique.*—"It has been thought possible by mixing beton and iron or steel to replace the purely metallic elements of building construction by parts equally incombustible, but lighter, and more simply and rapidly made;" the joists, girders, &c., made of cement strengthened with iron or the like, have inwardly bent bars of which the central branch is horizontal and arranged in the plane of the longitudinal bar which forms the girder's chord of tension and of which the arms are always raised in the same vertical plane and in the direction of the point of support, whilst another branch is bent down to fit securely in the masonry or is prolonged into the adjoining span.

30,344.—FIRE-PROOF FLOORS: *F. H. Willis.*—For the construction of solid concrete floors without the aid of centering, and so as to enable the concrete to entirely cover the bottom flanges of the joists and girders, moulded concrete and loose concrete are employed: to make a floor, blocks, approximately ⊥-shaped, and moulded of a fire-proof cement concrete, are placed from joist to joist with their lower portion downwards and touching one another, the space from the top of their flanges to the top of the upper flanges of the joists is filled in with loose concrete—the weight of the loose concrete is supported by the blocks until set, and so the necessity for temporary centering is obviated.

NEW APPLICATIONS.

For week ending February 26.

4,233, Everest & Watts, Raising and Lowering Windows. 4,234, F. G. Ham, Sewer Ventilation and Aëration, and 4,235, Sewer Valve or Grate. 4,241, H. Sutcliffe, Noiseless Water-closets. 4,246, W. Maguire, Decorating Tiles, Hollow Ware, &c. 4,251, J. W. Bentley, and 4,399, G. E. Ashdown, Brushes. 4,259, W. F. Spikes, Metal Map Outlines. 4,260, Hutcheson & Serviee, Fire-clay Bricks and Mortar. 4,273, T. Sheppard, Curing Smoky Chimneys. 4,274, H. Morrison, Road-breaking Machines. 4,287, H. V. James, an Electrical Arc Lamp. 4,300, H. Herrmann, Lifts and Hoists for Pits and Shafts. 4,305, Brown & Baguley, Easels. 4,320, H. R. O'Hara, Shower Baths. 4,323, C. Fellows, a Combination Tool. 4,324, J. A. Spitzer, Castings. 4,328, F. M. McLarty, Cutting Stone and like Materials. 4,334, J. Adair, Tube Joints and Connexions. 4,335, E. Heath, Automatic Shutter Cowl. 4,343, J. J. Lish, Slabs and Blocks for Pavements, Stair Steps, &c. 4,347, J. Kirkman, Automatic Apparatus for Intermittent Flow of Water or Tank Effluent for Filtration, &c. 4,362, J. Mothersill, Coal Savers. 4,374, C. F. M. Le Mage, Folding Steps. 4,383-4, H. M. Sturgis, Window-shade Rollers and Adjusters. 4,398, J. M. Murphy, and 4,409, Walkins & Jewett, Electric Railway Systems. 4,416, Venner and Others, Electricity Meters. 4,418, C. L. Janoyer, Roofing Tiles. 4,419, J. R. Bell, Grab Dredgers. 4,433, Hobdell & Jones, Doors for Cold Storage Chambers, &c. 4,441, H. O. Duncan, Electric Motors. 4,442, C. H. Hoppe, Raising, Lowering, and Transporting Loads. 4,475, W. & T. Fox, and 4,780, H. Vincent and Others, Wrenches and Spanners. 4,483, F. Pich, Hard Soldering Cast Iron. 4,504, A. O. Cairns, Door, Cupboard, and similar Handles. 4,506, W. Warwick, Revolving Platforms of Observation Towers. 4,510, Cunnah & Hughes, Metallic Lathing for Ceilings, Roofs, &c. 4,543, C. Schoenfelder, Artificial Stone, and Furnaces for Burning the same. 4,549, F. J. Sprague, Electrical Control of Elevators or other Machinery. 4,552, A. S. Harrison, Detachable Joint. 4,564, W. Broughton, Chimney Flue Pipes. 4,574, C. Claxton, Ventilators. 4,583, Mary Austin, a Line Winder. 4,594, F. J. Bergman, Cement and Building Blocks. 4,607, A. Ransome, Vertical Sawing Machine. 4,621, P. Vassia, Electric Arc Lamps. 4,631, F. Spengler, Hinges. 4,632, A. de Man, Fireproof Buildings. 4,648, T. W. Woodhouse, Water Taps. 4,652, J. Sharpe, Brickmaking. 4,656, W. J. Howarth, Flushing Water-closets. 4,660, Paton & Currie, Locks. 4,672, O. Honegger, Gates. 4,678, C. E. Hearson, Insulation of Electrical Wire. 4,692, E. W. Faithfull, Window Sash Fasteners. 4,696, J. W. Sharpe, Fire-places. 4,697, J. A. Rooney, Combined Square and Protractor. 4,708, G. M. Henley, China-clay Kilns. 4,712, J. A. Prince, Stopping Attachments for Paper-embossing Machines. 4,723, Franco American Casting Company, Moulds and Castings, and 4,724, Rubber Moulds, Patterns, or Models. 4,732, F. H. Cowles, and 4,610, P. J. Rang, Fire-Extinction. 4,737, Séguéla & Soula, Shovels, &c. 4,740, J. Houbois, a Dowel. 4,759, Barr and McWhirter, Indicating and Recording at a Distance Changes of Level of Fluids in Reservoirs, Tanks, Tideways, Gas-holders, &c. 4,770, W. & T. Fox, Tube Vices. 4,784, P. Reimann, Closing of Regulating Valves. 4,793, E. H. Bentley, Spade and Other Tool Handles. 4,802, W. Osment, Finishing or Cleaning off Doors, &c. 4,819, W. T. Gibbs, Electric Heating of Materials in Closed Chambers. 4,827, Tablet and Ticket Company, Sectional Maps.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

February 16.—By J. E. WALTER (at Boston).

Carrington, Lincs.—Two cottages and five closes, 138 a. 0 r. 20 p., f. £6,550
Stickford Fen, Lincs.—A freehold farm, 132 a. 0 r. 22 p. 4,000
Coningsby, Lincs.—"The Dogdyke Farm," 60 a., f. 2,100

February 23.—By R. TIDEY & SON.

Hammersmith.—Distillery-lane, l.g.r. 6*l.* 5*s.*, u.t. 65¼ yrs. £125
De Beauvoir Town.—42, De Beauvoir-rd., u.t. 35 yrs., g.r. 6*l.*, e.r. 45*l.* 440
47 and 49, De Beauvoir-rd., u.t. 18 yrs., g.r. 9*l.*, r. 83*l.* 535
41 and 43 Culford-rd., u.t. 20¾ yrs., g.r. 7*l.*, r. 60*l.* 16*s.* 450
38, 40 and 42, Ufton-rd., u.t. 21½ yrs., g.r. 11*l.*, r. 96*l.* 815
Hoxton.—11, Herbert-st., u.t. 44 yrs., g.r. 5*l.* 5*s.*, r. 40*l.* 400
12, Bracklyn-st., u.t. 10 yrs., g.r. 3*l.*, r. 30*l.* 140
Islington.—36, St. Paul-st., u.t. 29 yrs., g.r. 4*l.* 4*s.*, r. 36*l.* 310
38, Oakley-rd., u.t. 42 yrs., g.r. 6*l.*, e.r. 44*l.* 435
Leyton.—8, Amberley-rd., f., e.r. 34*l.* 400

By BAXTER, PAYNE & LEPPER.

Islington.—23, Canonbury Villas, u.t. 21 yrs., g.r. 8*l.*, r. 45*l.* 310

By DEBENHAM, TEWSON & CO.

Teddington.—3, 4, 7, 8, 9, 10, 11 and 12, Cambridge-rd., u.t. 971 yrs., g.r. 48*l.*, e.r. 288*l.* .. 1,755
South Kensington.—30, Lexham-gdns., u.t. 74 yrs., g.r. 12*l.*, r. 140*l.* 1,380
Chislehurst, Kent.—Chislehurst Hill, "The Garth," f. 800
Chislehurst Hill, "Rodwold," f., r. 80*l.* 1,100
Chislehurst Hill, "Powerscourt," f., r. 80*l.* 1,200
15, Mill-pl., and 1 to 6, Camden-ter., f., r. 144*l.* 8*s.* 1,520
3, Imperial-ter., and 11 to 17, Camden-ter., f., r. 164*l.* 10*s.* 1,730
1, 2, and 4 to 9, Imperial-ter., f., r. 145*l.* 18*s.* .. 1,400
7 to 10, and 18 and 19, Camden-ter., f., r. 100*l.* 2*s.* 860
Chislehurst Hill, three sets of freehold stabling, r. 99*l.* 870

By CUMBERLAND & HOPKINS (at Linslade).

Linslade, Bucks.—"St. Mary's Lodge" and house adjoining, f., e.r. 85*l.* 1,140

By G. B. HILLIARD & SON (at Romford).

Romford.—Queen-st., 10 cottages and plot of land, f., r. 139*l.* 12*s.* 1,575
Barkingside.—Bennett's Castle-lane, five freehold cottages and plot of land 325

By J. THORNBOROUGH (at Durham).

Butcher Race, Durham.—Various enclosures, 123 a. 3 r. 17 p., f. 2,290
Hett, Durham.—A freehold farm, area 59 a. 0 r. 36 p. 1,335

February 24.—By BOYTON, PEGRAM, & BUCKMASTER.

Kensington.—81, St. Dunstan's-rd., u.t. 91 yrs., g.r. 6*l.* 10*s.*, r. 38*l.* 350
Walham Green.—48, Harwood-rd., u.t. 69 yrs., g.r. 6*l.* 6*s.*, e.r. 45*l.* 450

By G. GOULDSMITH, SON, & CO.

Kensington.—26, Kensington Palace-gdns., and 1, Palace-gdns.-mews, u.t. 44½ yrs., g.r. 73*l.* 10*s.* 5,600

By HARDS & BRADLEY.

Greenwich.—538, 540, and 542, Woolwich-rd., u.t. 85 yrs., g.r. 14*l.* 12*s.* 6*d.* 850
16, 17, 18, and 19, Bridge-ter., u.t. 74 yrs., g.r. 16*l.* 16*s.* 1,060
115 and 117, Annandale-rd., u.t. 66½ yrs., g.r. 8*l.* 8*s.* 495
38, 40, and 42, Selcroft-rd., u.t. 60 yrs., g.r. 10*l.* 10*s.* 385

By C. C. & T. MOORE.

Mile End.—62 to 70 (even), Clinton-rd., u.t. 45 yrs., g.r. 20*l.*, r. 134*l.* 1,695
6 and 8, Hunt-st., and 1 to 14, Orange-yard, area 15,000 ft., f., r. 511*l.* 4*s.* 6,500
Spitalfields.—Corbett's-ct., f.g.r. 45*l.*, reversion in 37½ yrs. 1,710
Bromley.—19 and 20, Franklin-st., u.t. 54 yrs., g.r. 8*l.* 215
Wapping.—49, Great Hermitage-st., f., e.r. 45*l.* .. 500
Limehouse.—2, Aston-st., u.t. 28¼ yrs., g.r. 3*l.* 5*s.*, r. 28*l.* 235
Stepney.—93, Bromley-st., u.t. 9 yrs., g.r. 2*l.*, e.r. 32*l.* 150

By F. MILLER & REID.

Stoke Newington.—59, St. Kilda's-rd., u.t. 81½ yrs., g.r. 9*l.* 9*s.*, e.r. 50*l.* 610

By J. BLECKLEY SMITH.

Camden Town.—Torriano-av., "Grove Cottage" and "Ivy Cottage," u.t. 46 yrs., g.r. 8*l.*, r. 58*l.* 435

By NEWBON, EDWARDS, & SHEPHARD.

Barnsbury.—54, Barnsbury-grove, u.t. 40 yrs., g.r. 6*l.*, r. 42*l.* 415
Holloway.—37 and 38, St. John's Park, u.t. 53½ yrs., g.r. 15*l.*, r. 80*l.* 850
Finsbury Park.—14, Woodstock-rd., u.t. 69 yrs., g.r. 6*l.* 10*s.*, r. 32*l.* 335
Holloway.—87 and 91, Kingsdown-rd., u.t. 65 yrs., g.r. 12*l.* 10*s.* 450
75, Cornwallis-rd., u.t. 57 yrs., g.r. 4*l.*, r. 30*l.* .. 270
St. Luke's.—17 and 25, Norman's-bldgs., u.t. 18¼ yrs., g.r. 6*l.*, r. 52*l.* 205
Victoria Pk.—103, 104, 106, 107, and 108, Cadogan-ter., f., r. 132*l.* 1,815
Holloway.—67, 69, 71, and 73, Cornwallis-rd., u.t. 57 yrs., g.r. 16*l.*, r. 135*l.* 1,050
Canonbury.—16, Alwyne-rd., u.t. 48 yrs., g.r. 8*l.*, e.r., 65*l.* 460
30, Ferntower-rd., u.t. 51½ yrs., g.r. 6*l.* 6*s.*, e.r. 40*l.* 525
Crouch End.—11, Drylands-rd., u.t. 90 yrs., g.r. 6*l.* 10*s.*, r. 32*l.* 305
Bexley Heath, Kent.—61, Lion-rd., u.t. 80 yrs., g.r. 6*l.*, r. 30*l.* 360
Lion-rd., "Carey's Cottages," f., r. 31*l.* 4*s.* 195
Walthamstow.—32, Orford-rd., f., e.r. 30*l.* 350

By STIMSON & SONS.

Walthamstow.—Edinburgh-rd., a plot of freehold land 700
Finsbury Pk.—3 and 5, Brownswood-rd., u.t. 73¾ yrs., g.r. 14*l.*, e.r. 80*l.* 3,025
Southwark.—207, Borough High-st., f., r. 140*l.* .. 530
Lambeth.—80, York-rd., u.t. 28 yrs., g.r. 12, r. 75*l.* 255
Brixton.—52, Cornwall-rd., u.t. 64 yrs., g.r. 8*l.*, r. 43*l.* 12*s.* 1,835
113, 115, 119, 121, and 129, Stockwell Park-rd., r. 154*l.*, and l.g.r. 12*l.*, u.t. 43¾ yrs., g.r. 19*l.* 12*s.* 450
123, Stockwell Park-rd., u.t. 43¾ yrs., g.r. nil., r. 33*l.* 1,000
Battersea.—115, Queen's-rd., f., r. 55*l.* 530

Hackbridge, Surrey.—1 to 4, Wandle-rd., u.t. 94 yrs., g.r. 21*l.* £340
Peckham.—149 and 151, St. George's-rd., u.t. 65 yrs., g.r. 8*l.* 530
63, Bird-in-Bush-rd., u.t. 69 yrs., g.r. 5*l.* 200
33, 35, 37, and 39, Sandison-st., u.t. 49½ yrs., g.r. 12*l.* 620

By J. A. & W. THARP.

Bow.—16, 18, and 20, Furze-st., u.t. 78 yrs., g.r. 15*l.*, e.r. 96*l.* 4*s.* 640
32 and 33, Furze-street, u.t. 29½ yrs., g.r. 25*l.*, r. 52*l.* 170
Stratford.—1 to 4, Montague-st., f., r. 91*l.* 815

By WYATT & SON (at Chichester).

Chichester, Sussex.—10, Southgate, f. 950
60, South-st., f., r. 24*l.* 420
19 and 20, St. James'-rd., and a plot of land, f. ... 280

By HUMBERT & FLINT (at Abbots Langley).

Abbots Langley, Herts.—Langley-rd., seven plots of land, f. 136
68 and 70, Marlins-sq., f., r. 35*l.* 459

By J. H. BRADWELL & SON (at Aslockton).

Sutton-in-the-Vale, Notts.—A freehold farm, 17 a., r. 30*l.* 630

February 25.—By GREEN & SON.

Blackheath.—1 to 32, Lyveden-rd., u.t. 73½ yrs., g.r. 128*l.*, r. 547*l.* 6*s.* 3,320

By ANSTEY & SONS.

Plaistow.—138 to 148 (even), St. Mary's-rd., u.t. 70½ yrs., g.r. 1*l.* 800

By S. H. BAKER.

Highbury.—3 and 4, Alma-rd., f., r. 82*l.* 1,260
Hoxton.—46, New North-rd., u.t. 37½ yrs., g.r. 7*l.* 11*s.*, r. 62*l.* 420
City-rd.—33, Westmoreland-pl., f., r. 36*l.* 510

By STOCKER & WARD.

Catford.—70, 72, 74, and 76, Engleheart-rd., u.t. 80 yrs., g.r. 16*l.* 625

By H. CHAPMAN & CO.

Fulham.—95, Fulham Cross; 323, Lillie-rd, and 2 and 3, Munster-mews, f., r. 161*l.* 8*s.* 2,200

By DYER, SON, & HILTON (on the Premises).

Greenwich.—7, Gloucester-pl., u.t. 40 yrs., g.r. 12*l.*, e.r. 60*l.* 375

By DICKINSON & RIGGALL (at Great Grimsby).

Laceby, Lincs.—An enclosure of land, 12 a. 3 r. 32 p., f. 715

February 28.—By ELLIOTT, SON, & BOYTON.

Tottenham Court-rd.—No. 218, u.t. 4 yrs., g.r. 5*l.*, r. 120*l.* 335
9 and 10, Alfred-pl., u.t. 4 yrs., g.r. 21*l.* 14*s.* 8*d.*, r. 112*l.* 300
11, Alfred-pl., u.t. 5½ yrs., g.r. 8*l.* 16*s.*, r. 65*l.* .. 175

By RICHARDSON & BARTON.

Kensington.—49, West Cromwell-rd., ut. 70 yrs., g.r. 12*l.* 10*s.*, e.r. 110*l.* 1,200

By E. SIMPSON.

New Cross.—30, 34, and 36, Walpole-st., u.t. 57 yrs., g.r. 15*l.* 700

By WILLIAM WHITELEY.

Kensington.—1, 3, and 5, Adair-rd., u.t. 67 yrs., g.r. 21*l.* 620
Bayswater.—24, Sutherland-pl., u.t. 48 yrs., g.r. 8*l.* 8*s.*, e.r. 50*l.* 370

By HEPPER & SON (at Holbeck).

Holbeck, Yorks.—26, 28, and 30, Silver-st., f., r. 18*l.* 12*s.* 250
5 and 7, Midland-ter., f., r. 29*l.* 500

March 1.—By C. H. BROWN.

Pimlico.—43, Westmoreland-st., u.t. 32 yrs., g.r. 16*l.*, e.r. 50*l.* 290
Putney.—6 and 8, Rotherwood-rd., u.t. 92 yrs., g.r. 10*l.* 10*s.* 515

By Messrs. LEAGE.

South Kensington.—13, Tregunter-rd., u.t. 34 yrs., g.r. 7*l.*, e.r. 100*l.* 810

By C. W. DAVIES.

Drury-lane.—No. 78, a freehold building site 700
Harlington, Middlesex.—Bath-rd., a plot of orchard land, f. 150
Islington.—4, 6, 8, and 10, Pickering-st., u.t. 46 yrs., g.r. 24*l.* 460
Somers Town.—53 and 55, Charlton-st., e.r. 96*l.*; also l.g.r. 137*l.*, u.t. 30 yrs., g.r. 120*l.* 600
Barnsbury.—4, 6, 8, and 10, St. Clement's-st., u.t. 42 yrs., g.r. 12*l.*, r. 96*l.* 18*s.* 585
Haverstock Hill.—8, Eton-villas, u.t. 50½ yrs., g.r. 3*l.* 650
Brighton.—6, Marlborough-pl., f., e.r. 120*l.* 1,795

By THORNTON, LUMSDEN, & CO. (at Masons' Hall Tavern).

Haggeston.—Haggerston-rd., "The Duke of Wellington" p.-h., u.t. 38 yrs., r. 102*l.* 10*s.*, with goodwill 10,980

By S. & G. KINGSTON (at Spalding).

Pinchbeck, Lincs.—A freehold farm, area 37 a. 3 r. 18 p. 1,930

By STRAKER & SON (at Abergavenny).

Grosmont, Mon.—"The Dairy Farm," 280 a. 2 r. 9 p., f. 4,800
Llangattock, Lingoed, Mon.—"Little Kethlea Farm," 37 a. 3 r. 11 p., f. 850

March 2.—By FORTESCUE & CO.

Kensington.—2 and 4, Bolinbroke-rd., u.t. 88 yrs., g.r. 24*l.*, r. 105*l.* 700

By G. F. HAWKINS.

Fulham.—18, Haldane-rd., u.t. 53½ yrs., g.r. 4*l.*, e.r. 36*l.* 275

By F. JOLLY & CO.

Hackney Downs.—59, Downs-rd., f., e.r. 80*l.* 1,200
Southgate.—76, 77, 78, and 79, Travers-rd., u.t. 77½ yrs., g.r. 18*l.* 155

By F. LONG & SON.

Deptford.—31, 33, and 35, Prince-st., u.t. 64 yrs., g.r. 15*l.* 630
51 and 53, Czar-st., u.t. 65½ yrs., g.r. 9*l.* 480
31, New King-st., u.t. 65½ yrs., g.r. 6*l.* 150

By SAUNDERS & TAYLOR.

Brentford, Middlesex.—High-street, "The Alexandra" b.-h., c., r. 30*l.* 1,525
306, High-st., c., r. 26*l.* 350

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITIONS.

Nature of Work.	By whom Advertised.	Premiums.	Designs to be delivered.
County Offices	Lindlithgowshire C.C.	30 Guineas First and 15 Guineas Second	Mar. 21
*Technical School	Trowbridge Corp.	40l. 30l. and 20l.	May 28
*Municipal Buildings	Godalming T.C.	50 Guineas	No date
Church and Lecture Hall, Chlorine, Malone-road	Committee of Fisherwick Place Presbyterian Church, Belfast	50l. First and 25l. Second	do.

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
Road Materials	Chester-le-Street R.D.C.	G. W. Ayton, Highway Surv. Chester-le-Street	Mar. 14
*Erection of Superstructure of Asylum with Offices, &c.	County Boro West Ham	L. Angell, Town Hall, Stratford, E.	do.
*Making-up and Paving Roads	Wandsworth B. of W.	Offices, East Hill, Wandsworth	Mar. 15
*New Sewers and Repairs to Existing Sewers, &c.	St. Giles B. of W.	Offices, 197, High Holborn, W.C.	do.
*Asphalte and Wood Pavement House, Halifax-road, Brighouse	do.	do.	do.
Sewer, Dane-street, &c.	Shoeburyness U.D.C.	Sharp & Waller, Archt 32, Bradford-rd. Brighouse	do.
*Board Room and Offices	Edmonton Union	H. Harris, Surv. Clarence-st. Southend-on-Sea	do.
*Concrete River Wall	Hammersmith Vestry	T. E. Kinglittey, 106, Cannon-street, E.C.	do.
Shelter, &c. at Workhouse, Jericho	Bury (Lancs.) Union	H. Mair, Town Hall, Hammersmith	Mar. 16
Additions to Church, Dunmoyle, co. Tyrone		A. Hopkinson, Archt. 16, Agur-street, Bury	do.
Boundary Wall at Workhouse	York Union	J. L. Donelly, Archt. 38, High-street, Omagh	do.
Additions to Hotel, Nantymoel	Rhondda Valley Brewery Co.	Penty & Penty, Archts. Lendal-chmbrs, York	do.
Widening Church-road, Gurnard	Isle of Wight R.D.C.	J. Rees, Archt. Hillside, Pentre, Glam.	do.
Lengthening King's Bridge, Freshwater	do.	J. E. Haynes, Surv. Park-road, Cowes	do.
Road Materials	Chelmsford T.C.	do.	do.
Paving, Road Making, &c. Elliscombe-road, Charlton, Kent	Lee District B. of W.	G. H. Sasse, Boro Surv. 16 New London-rd. Chelmsford	do.
Stone and Flint	Hollingbourn (Kent) R.D.C.	G. Whale, B. of W. Offices, Old Charlton	do.
Sewerage Works, Shooter's Hill	Plumstead Vestry	H. J. Bracher, 33, Earl-st. Maidstone	do.
Alterations to Deans Cottages, Warton, Lancs.		W. C. Gow, C.E. Vestry Hall, Maxey-rd. Plumstead	do.
Sinking Stone Shaft, Lower Green Farm, Brighouse		C. E. Smith, Highfield, Silverdale	do.
*Works and Materials	St. Giles B. of W.	Sharp & Waller, Mineral Surv. 32, Bradford-road, Brighouse	do.
Seven Houses, &c. Cross Roads	Lees & Cross Roads (Yorks.) Co.-op. Soc. Ld.	G. Wallis, 197, High-Holborn, W.C.	do.
Road Materials	Barnard Castle R.D.C.	W. & J. B. Bailey, Archt. Keighley	Mar. 17
School, Picklenash	Newent (Glos.) Sch. Bd	W. Parkin, Surv. Council's Offices, Barnard Castle	do.
Conversion of Cellar into Police Parade Room, Pendleton Town Hall	Salford Corp.	O. T. Price, Sch. Bd. Offices, Newent	do.
Road Works, Primrose Hill	Brentwood Parish Council	Borough Engr. Town Hall, Salford	do.
Granite and Slag	Long Sutton U.D.C.	J. Young, New-road, Brentwood	do.
Groynes	Lowestoft T.C.	Surveyor, Council's Offices, Long Sutton	do.
Sixteen Scullery Houses, Manley-st. Brighouse		G. H. Hamby, C.E. Town Hall, Lowestoft	do.
Distillery, Sanquhar, nr. Forres, N.B.		E. G. Brooke, Archt. 6, Huddersfield-road, Brighouse	do.
Painting, &c. Six Bridges over Irwell	Salford Corp.	C. C. Doig, Archt. Elgin	Mar. 18
Bridge Works, Springfield-lane, &c.	do.	Borough Engr. Town Hall, Salford	do.
Paving, &c. Back Albert-st. Earby	Skipton R.D.C.	do.	do.
Additions to Residence, Otterbourn, near Bell Busk, Yorks.		M. R. Knowles, Council Offices, Skipton, Yorks.	do.
Villas, Vernon-street, Bridlington Quay	E. Rodes	Barber, Hopkinson, & Co. Archt. Craven Bank-chambers, Keighley	do
Vicarage, Fleur de Lis, Pengam, Wales	Rev. Thomas Edwards	J. Earnshaw, Archt. Carlton House, Bridlington Quay	Mar. 19
Water Supply	Huntly, N.B. Commrs.	E. M. Bruce-Vaughan, Archt. Cardiff	do.
*Stoneware Pipe Sewers, Manholes, &c. and Water Culvert	Hornsey U. D. C.	J. Barron, C.E. 156, Union-street, Aberdeen	do.
*Making-up and Widening Road	Beckenham U. D. C.	E. J. Lovegrove, Council Offices, Highgate, N.	Mar. 21
Providing and Laying 3 miles C. I. Pipes, &c.	Edinburgh and District Water Trustees	J. A. Angell, Council Offices	do.
House, Londonderry	Mr. B. Smith	J. & A. Leslie & Reid, C.E. 72a, George-st. Edinburgh	do.
Alterations to Commercial Hotel, Kendal	Spencer & Co. Limited	W. E. Pinkerton, Archt. 8, Dramond, Londonderry	do.
Bungalow, Duff-avenue, Elgin		J. Bintley, Archt. 7, Lowther-street, Kendal	do
Buildings at Sewage Disposal Works	Erith (Kent) U. D. C.	Reid & Wittet, Archt. Elgin	do.
Boiler House, &c. Bucknall	Stoke-on-Trent R.D.C.	G. Chatterton, C.E. 46, Queen Anne's-gate, Westminster, S.W.	do.
Schools, near Diss	Roydon S.B.	L. Sugden, Archt. Miles Bank-chambers, Hanley	do.
Repairs to Cemetery Chapels, James Bridge	Darlaston U.D.C.	H. G. Bishop, Archt. Stowmarket	do.
Business Premises and House, Crumlin-road, &c. Belfast	S. M'Ateer	Surveyor, Town Hall, Darlaston	do.
Water Supply Works	Langport R.D.C.	W. J. Moore, Archt. Whitehall-buildings, Ann-street, Belfast	do.
*Cast Iron Water Mains and Accessories	Langport R.D.C.	Bailey, Denton, Son, & Co. Engr. Palace-chambers, Westminster, S.W.	do.
*Extension of Electric Machinery Buildings	County Boro. Croydon	Clerk's Office, Langport, Som.	do.
*Supply of Sulphate of Alumina	Willesden D.C.	Boro. Engr. Office, Croydon	do.
*Flints and Granite Curb and Cubes	Watford U.D.C.	O. C. Robson, Offices, Dyne-road, Kilburn, N.W.	Mar. 22
Additions to Workhouse	Brighton Union	Council Offices	do.
Assembly Rooms, Bridge-street, Swindon		H. S. Reed, Archt. Parochial Offices, Prince's-street, Brighton	do.
Houses, &c. Longard's-lane, Meltham, near Huddersfield		R. J. Beswick, Archt. 9, Regent-st. New Swindon	do.
		Kirk & Sons, Archts. Huddersfield	do.

CONTRACTS—*Continued.*

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
Water Supply Works	Stromness Burgh Commissioners	W. R. Copland, Engr. 146, West Regent-street, Glasgow	Mar. 22
*Road Material	Lewisham B. of W.	Surv. Dept. Town Hall, Catford	do.
*Works and Materials	do.	do.	do.
*Bath and Discharge Rooms at Hospital	Hornsey U.D.C.	E. J. Lovegrove, Council Offices, Highgate, N.	do.
Organ Chamber, St. Mary's Church, Luddenden, near Halifax		T. L. Patchett, Archt. George-square, Halifax	Mar. 23
*Drainage of Workhouse Premises	Malling Union	J. Ladds, 7, Doughty-st. Mecklenburgh-sq. W.C.	do.
*Asphalte Paving Work and Repairs, Concrete Paving and Repairs, Stone Paving	Hackney Vestry	J. Lovegrove, Town Hall, Hackney	do.
*Cast Iron Water Pipes	Cuckfield R.D.C.	J. Mansergh, 5, Victoria-street, S.W.	Mar. 24
*Repairs, Maintaining, Decorating Police Stations, Courts, &c.	Metropolitan Police District	Surveyor, New Scotland Yard, S.W.	do.
Two Houses, Raw-lane, Illingworth (Yorks).		M. Hall, Archt. 29, North Gate, Halifax	do.
Electric Light Station	Salford Corp.	Electrical Engineer, Walness-road, Salford	do.
Road Works, Ross and Cromarty		A. G. Joass, Surv. County Buildings, Dingwall	Mar. 25
*Masons' and Paviors' Work, Granite, Ballast, Flints, &c.	Wood Green U.D.C.	C. J. Gunyon, Town Hall, Wood Green	do.
*Police Station and Court Room	County of Chester	H. Beswick, 17, Newgate-street, Chester	do
Vagrant Wards	Bedwellty (Wales) Union	James & Morgan, Archt. Charles-street-chambers, Cardiff	Mar. 26
*Alterations at Infirmary and Constructing Underground Carriers, and General Steam Heating	Kingston Union	W. H. Hope, Union Offices, Kingston-on-Thames	do.
*Fire Brigade Station, North Woolwich	London County Council	Architect's Dept. 13, Spring-gardens, S.W.	Mar. 28
*Road Materials	Acton D.C.	D. J. Ebbetts, 242, High-street, Acton, W.	Mar. 29
Station, &c. Roath, Cardiff	G.W.R. Co.	G. K. Mills, Sec. Paddington Station, London	do.
*Alterations at Asylum	Poplar and Stepney Sick Asylum	J. & S. F. Clarkson, 136, High-street, Poplar	do.
*Replacing Basins at Public Conveniences	St. James's, Westminster, Vestry	Vestry Hall, Piccadilly, W	do.
Restoration of Parish Church, Auldearn		J. Robertson, Archt. Inverness	do.
*Sewering, Paving, Lighting Roads	Kingston-on-Thames Corp.	Boro. Surv. Clattern House, Kingston-on-Thames	Mar. 30
*Extension of Electric Lighting Station	Hammersmith Vestry	H. Mair, Town Hall, Hammersmith	do.
*New Wing to Hospital	Warneford Hospital, Leamington	Secretary at Hospital	do.
*Cleansing, Painting, and Repairs at Model Dwellings	St. James's, Westminster, Vestry	Vestry Hall, Piccadilly, W.	do.
Villa, Albert Promenade, Skircoat		C. F. L. Horsfall & Son, Archts. Halifax	Mar. 31
*Laying and Supply of Granite Kerb, Supply of Gravel and Hardcore	Romford U.D.C.	Surveyor, Council Offices	do.
Infirmary Buildings at Workhouse	Windsor Union	Edgington & Summerbell, Archts. 17, Park-street, Windsor	do.
*Motor Vehicles	Bournemouth Corp.	F. W. Lacey, Municipal Offices	April 2
*Underground Convenience	Paddington Vestry	Surveyor's, Dept. Vestry Hall, Harrow-road, W.	April 4
*Extension of Electricity Works	Leyton U.D.C.	H. C. Bishop, Cathall-rd. Leytonstone	do.
*Excavating and Foundation to Asylum	Kesteven County Asylum	G. T. Hine, 85, Parliament-street, S.W.	do.
Sewers, Theydon Bois	Epping (Essex) R.D.C.	E. Egan, Archt. Holmdale, Loughton, Essex	April 5
Reconstruction of Pirnough Bridge, near Ditchingham Station	Norfolk C.C.	T. H. B. Heslop, C.E. Shirehouse, Norwich	do.
*Bakery, Flour Store, and Shop	New Brompton Economical Society, &c.	E. J. Hammond, 111, High-street, New Brompton, Kent	April 7
*Construction of Extension of Railway with Bridges	Callander and Oban Ry. Co.	Sir J. Wolf Barry, 21, Delahay-st. Westminster	April 18
*Construction and Working of Cattle Pens, Slaughter-house, two Markets and two Avenues	Belem (Para, Brazil) Municipal (Administration	Brazilian Legation, London	April 20
*Infirmary Offices, &c.	West Ham Union	T. E. Hillary, Offices Union-rd. Leytonstone, E.	July 24
*Nine Shops, Public Hall. Offices. Warehouses, &c.	Long Eaton Working Men's Co-op. Society	E. R. Ridgway, Long Eaton, near Nottingham	No date
Four Cottages, Meredith-rd. Clacton-on-Sea		T. H. Baker, Archt. Clacton-on-Sea	do.
Shop, &c. Church-street, Keighley		Judson & Moore, Archt. York-chmbrs. Keighley	do.
Eight Houses, Victoria-ter. Brierfield		Dent, Archt. Railway-st. Nelson, Lancs.	do.
Thirty Houses, Pine and Shaw Streets	Bury (Lancs.) Dist. Co.-op. Soc. Ltd.	A. Hopkinson, Archt. 16, Agur-street, Bury	do.
Additions to Bay Horse Hotel, Wakefield-road, Bradford		F. Moore, Archt. 40, Sunbridge-road, Bradford	do.
Ten Cottages, Drove-lane, Sleaford		Jesse Clare, Sleaford	do.
Painting, &c. Thirteen Houses, Railway-terrace, Kirkham, Lancs.		E. G. Stead, Archt. 29, Princess-st. Manchester	do.
Schools, Wadebridge, Cornwall		Kerley & Ellis, Archts. Exmouth	do.
Thirty-one Houses, Otley		Fairbank & Wall, Archts. 3, Manor-square, Otley	do.
House and Shop, Yorkshire-street, Morecambe	W. H. Burrow	J. Marshall, Archt. Back-crescent, Morecambe	do.
Rebuilding The Black Bull Inn, &c. Starling	Bury (Lancs.) Brewery Co.	T. Nuttall, C.E. 20, Market-street, Bury	do.
Church, Blaydon-on-Tyne		Nicholson & Bowman, Archt. 52, Westgate-road, Newcastle-on-Tyne	do.
Pottery Buildings, Burton-in-Lonsdale	Messrs. Bateson & Sons	Bateson & Sons, Burton-in-Lonsdale	do.
Water Supply Works, Lochmaddy	North Uist D Commte. of the Inverness C.C.	T. Wilson, Solicitor, Lochmaddy	do.
Granite and Slag	East Elloe R.D.C.	E. P. Mossop, Council Offices, Holbeach	do.
Offices, Stores, &c. Boston, Lincs.	Soulby, Sons, & Winch, Ltd.	Jas. Rowell, Archt. Boston	do.
Road-making and Paving Works, Isaac's-road, &c.	Great Yarmouth Corp.	Boro. Surv. Town Hall, Great Yarmouth	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in.
*Draughtsman	Rochdale Corp.		Mar. 16
*Clerk of Works	Godstone Union		Mar. 17

Those marked with an asterisk (*) are advertised in this Number. *Competitions*, p. vi. *Contracts*, pp. iv, vi. vii. viii. & ix. *Public Appointments*, pp. xix. & xxi.

PRICES CURRENT OF MATERIALS.

TIMBER.		
Greenheart, B.G.	ton	8/0/0 0/0/0
Teak, E.I....load		9/0/0 14/0/0
Sequoia, U.S. ft.cu.		1/8 1/10
Ash, Canada, load		2/17/6 4/2/6
Birch, do.		2/17/6 4/10/0
Elm, do		3/12/6 4/12/6
Fir, Dantsic, &c..		1/11/0 3/11/0
Oak, do.		2/4/0 3/4/0
Canada		3/15/0 5/0/0
Pine, Canada red		0/0/0 0/0/0
Do. yellow		2/5/0 4/5/0
Lath, Dantsic, fath		4/10/0 5/10/-
St. Petersburg..		5/0/0 6/10/0
Wainscot, Riga, &c., log		3/12/6 5/10/0
Odessa, crown....		3/12/6 5/10/0
Deals, Finland 1nd & 1st std 100		7/15/0 8/5/0
Do. 4th & 3rd ..		7/15/0 8/5/0
Do. Riga		6/5/0 7/5/0
St. Petersburg, 1st yellow		9/15/0 12/5/0
Do. 2nd yellow.		8/15/0 10/5/0
Do. white		8/5/0 10/5/0
Swedish		8/15/0 15/5/0
White Sea		9/5/0 15/15/0
Canada, Pine 1st		19/5/0 25/5/0
Do. do. 2nd		13/15/0 16/5/0
Do. do. 3rd, &c.		6/5/0 9/15/0
Do. Spruce, 1st		10/0/0 11/10/0
Do. do. 3rd and 2nd		7/10/0 8/10/0
New Brunswick		7/0/0 7/10/0
Battens all kinds boards, sq., 1 in. prep. 1st		5/0/0 18/0/0 9/6/0 17/0/0
Do. 2nd		8/0/0 13/6/0
Other qualities—		6/6/0 7/6/0
Cedar, Cuba, ft.		/4 /4½
Honduras, &c.		/3¾ /4½
Mahogany, Cuba		/5 /6½
St. Domingo, cargo av.		/4½ 0/1/3
Mexican, do. do.		/3¾ /4
Tobasco, do. do.		/4 /6½
Honduras, do.		/4½ /6
Box, Turkey, ton		4/0/0 15/0/0
Rose, Rio		7/0/0 14/0/0
Bahia		6/0 0 12/0/0
Satin, St. Doming.		0/0/5 0/1/0

TIMBER (continued).		
Satin, Porto Rico		0/0/6 0/1/6
Walnut, Italian ..		0/-/3 0/0/7
METALS.		
Iron—Pig, in Scotland	ton	2/6/1½ 0/0/0
Bar, Welsh, in London		5/15/0 5/17/6
Do. do. at works in Wales		5/10/0 5/12/6
Do. Staffordshire, in London		6/5/0 7/10/0
COPPER—British cake and ingot		53/10/0 54/-/0
Best selected ..		54/10/0 55/0/0
Sheets, strong..		59/10/0 60/-/0
Chili bars		50/1/3 0/0/0
YELLOW MTL. lb.		5d-
LEAD—Pig Spanish	ton	12/15/0 0/0/0
English com. bands		13/-/0 0/0/0
Sheet, English 6 lbs. per sq. ft. and upwards ..		14/-/0 £/0/0
Pipe		14/10/0 0/0/0
ZINC—English sheet	ton	20/5/0 £/0/0
Vieille Montagne		21/10/0 0/0/0
Spelter		18/3/9 18/6/3
TIN—Straits		65/1/3 0/0/0
Australian		65/12/3 66/0/0
English Ingots..		67/10/0 68/10/0
Banca		61/0/0 0/0/0
Billiton		59/15/0 60/£/0
OILS.		
Linseed	ton	16/5/0 0/0/0
Cocoanut, Cochin		27/15/0 £/0/0
Do. Ceylon		22/0/0 0/0/0
Palm, Lagos		21/15/0 0/0/0
Rapeseed, English pale		27/10/0 0/0/0
Do. Brown		26/0/0 £/0/0
Cottonseed ref.		14/5/0 15/5/0
Oleine		13/10/0 14/10/0
Lubricating U.S.		0/5/3 0/7/6
Do. Black		0/5/0 0/6/6
TAR—Stockholm barrel		1/0/0 0/0/0
Archangel		0/12/6 0/-/0
Turpentine		25/5/0 0 0/0

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

ABERFAN (Wales).—For the erection of four cottages. Mr. C. Bailey, architect, Quaker's-yard, Aberfan :—

J. Williams	£968	G. Hancock, Merthyr Vale*	£680
Evans & Owen	810	E. Price	652
J. Blatchford	720		

* Accepted.

AYLESBURY (Bucks).—For alteration and addition to the "Railway Hotel," Aylesbury. Mr. Guest Luckett, architect, Aylesbury :—

Kingerlee & Sons	£2 497	Senior & Clarke, Wendover*	£2,100
Sherwin	2,300	Grimsdale	1,849
Kimberley	2,183		

* Accepted.

Net amount of tenders after allowing for old materials in existing house.

BARROW-IN-FURNESS.—Accepted for alterations to Town Hall for the Corporation :—
Thos. Slee, Barrow £146 10

BEDDINGTON.—For erection of a dairy shop at the Sand Hill, Beddington, for Mr. G. Hobden. Messrs. R. M. Chart & Son, architects, Croydon :—

J. Burges	£460	J. Clack*	£435

* Accepted.

BIRMINGHAM.—For the execution of sewerage works, Baldwins-lane, &c., for the King's Norton Rural District Council. Mr. A. W. Cross, C.E., 23, Valentine-road, King's Heath, Birmingham :—

Jacob Biggs	£2,865 0 0
Jones & Fitzmaurice	2 804 0 0
Currall, Lewis, & Martin	2,660 7 8
Geo. Trentham, 24, Heathfield-road, Handsworth, Birmingham (accepted)	2,395 0 0

[Engineer's estimate, £2,501 11s. 0d.]

BRIGHTON.—For the supply of granite kerb, &c. Mr. F. J. C. May, C.E., Town Hall, Brighton :—

	Flat granite kerb at per foot run.	6 in. by 4 in. granite pitchers at per ton.
	s. d.	£ s. d.
A. Robinson	1 1¼	1 7 6
J. Goodchild & Co., 118, Fenchurch-street, E.C.*	1 4½	1 7 0
J. Gordon & Sons	1 1½	1 9 6
E. J. Van Praagh & Co.	1 5½	1 11 0
Blichfield & Co.	1 4½	1 14 6
A. & F. Mannelle, 101, Leadenhall-street, E.C.†	1 7½	1 15 2
J. Mowlem & Co.	1 8½	1 15 6
W. Griffith	1 9½	1 16 3

* Accepted for 2,000 ft. of kerb and 400 tons pitchers.

† Accepted for 1,000 ft. kerb and 100 tons pitchers.

BYFLEET (Surrey).—For the erection of a village hall and club, for the committee. Messrs. Ashley & Armstrong, architects :—

Jno. Anderson	£2,693	B. Ingram & Co.	£2,376
Goddard & Son	2,612	J. Hunt, Chertsey*	2,222
Mitchell Bros.	2,520		

* Accepted.

CHEADLE (Staffs).—For the execution of sewerage works, High-street, &c., for the Rural District Council. Mr. F. T. Inskip, surveyor, Brook House, Cheadle :—

William Allcock	£230 0	F. Barke, Stoke-on-Trent*	£176 0
Williams	227 10		
Burton & Brown	200 0		

* Accepted.
Surveyor's estimate, £180.]

DOVER.—For the execution of sewerage works, London-road, for the Town Council. Mr. H. E. Stilgoe, C.E., Town Hall, Dover :—

Geo. Munro	£846 16 6	W. H. Saunders & Co., Southampton*	£730 0 0

* Accepted
[Engineer's estimate, £712.]

EASTBOURNE.—For the erection of a house and shop. Mr. W. H. Raffles, architect, 9, Argyll-street, Regent-street, London. Quantities by Mr. B. Swinstead, 22, Wellington-street, Strand, W.C. :—

James Carmichael	£1,343 6 2	G. Bainbridge & Son	£1,939 2 5
James Peerless	1,340 0 0		
M. Martin	1,300 0 0		

EPSOM.—For erecting Conservative Club. Mr. F. W. Ledger, architect :—

Barker	£2,130 0 0	Nottell	£1,849 0 0
Irwin	2,126 0 0	Burrage	1,839 0 0
Horwood Bros.	2,013 13 9	Wells	1,797 0 0
Holdsworth	1,662 0 0	Hart	1,757 0 0
Potter	1,885 0 0		

EXETER.—For the erection of offices, St. Thomas, Exeter, for Messrs. Willey & Co. Mr. C. E. Ware, architect, Gandy-street, Exeter :—

Luscombe & Son	£2,950	Richard F. Yeo	£2,553
George L. Stile & Son	2,845	Mingo & Boone	2 539
Lewis Bearne	2,793	Westcott, Austin, & White	2,524
George Herbert	2,666	Stephens & Son	2,496
Farr Brothers	2,600	W. Brealey, St. Thomas, Exeter*	2,395
John R. Gibbard	2,578		

* Accepted.

FAWKHAM (Kent).—For the erection of a house. Messrs Ashley & Armstrong, architects :—
Thomas Knight.

House	£1,109
Conservatory	59
Total	£1,168

Multon & Wallis.

House	£1,078
Conservatory	75
Total	£1,153

John Lonsdale, Swanley.*

House	£1,053
Conservatory	65
Total	£1,118

* Accepted subject to modification.

HANLEY (Staffs.).—For laying out land, Fenton Park Estate, for Mr. H. Warrington. Messrs. R. Scrivener & Sons, architects, Hanley :—

Tomlinson	£2,849 0	Horobin & Co.	£1,930 0
Bagnall	2,471 0	F. Barke, Stoke*	1,826 0
Embrey	2,321 0	A. Bullock	1,787 0
Williams	2295 0	Johnson	1,630 0
Brown & Blurton	1,984 16		

* Accepted.

HANLEY.—For erecting Dix's brewery. Messrs. R. Scrivener & Sons, architects, Hanley :—

J. Wilton	£4,939	G. Ellis	£4,670
H. P. Embrey	4,895	T. Godwin, Hanley*	4 668
Tomkinson & Betteney	4,883	C. Cornes	4,445
Bennett Bros.	4,768	J. Bagnall	4,425
J. R. Foxall	4,750	J. Cope	4,300

* Accepted.

HAYLE (Cornwall).—For the erection of a house, Phillack Towans. Mr. John Dunn, architect, Hayle, Cornwall :—

G. Miners (masonry and carpentry) £433

Masonry.

J. H. Wewme	£255	Hurrell*	£168
Mitchell	220		

Carpentry.

Pooley	£183 10	J. Dunn, Hayle*	£152 0
E. Coombe	155 0	Terrill	93 18

* Accepted.

HIGH WYCOMBE.—For the erection of buildings, &c., for the Electricity Company. Messrs. Moxam & Son, architects, High Wycombe, Bucks :—

H. T. Dickens	£2,597	G. H. Gibson	£2,450
J. T. Harris	2,500	H. Flint, High Wycombe*	2,383
C. H. Hunt	2,493	B. W. Martin	2,3 0
Nash & Sons	2,459	Churns	1,833

* Accepted.

HORNCASTLE.—For the erection of the "Stanhope Memorial." Mr. E. H. Lingen Barker, architect, Hereford :—

R. Bridgeman	£532	S. Sherwin	£397
W. Wade	439	Boulton & Sons	358
Dennis, Gill, & Son	427	Walter & Hensman, Horncastle (accepted)	335
J. Watkins	407		

HULL.—Accepted for rebuilding the "Swan" Inn, including Faience work and polished front, Beverley-road, for Messrs. Moor & Robson's Breweries, Limited. Messrs. Freeman, Son & Gaskell, architects, Albert-chambers, Carr-lane, Hull :—
Thos. Goates, Hull £1,255 15

HULL.—Accepted for rebuilding the "Duke of Cumberland," Hull. Messrs. Freeman, Son & Gaskell, architects, Hull :—
E. Good & Sons, Limited, Hull £833 6 5

LANCHESTER (Durham).—For the construction of sewage disposal works, Holmside Village, for the Rural District Council. Mr. J. E. Parker, C.E., Post Office Chambers, Newcastle-on-Tyne :—
E. H. Bell, Bishop Auckland £210

LEEDS.—For the execution of sewerage works, for the Hunslet Rural District Council. Mr. Sam Shaw, C.E., Dewsbury :—

I. Bentley	£1,626 3 3	S. Neale	£859 19 1
H. Wilson	1,017 16 7	J. Slinger & Sons	859 12 10
W. Simpkiss	905 8 4	J. Keighley, Hunslet*	833 0 0
M. Arundel	881 16 2		
W. Doleman	867 8 10		

* Accepted.

LONDON.—For additions and alterations to the "Red Cross Tavern," Barbican. Messrs. Shoebridge & Rising, architects :—

Ashby Bros.	£3,385	Joslyn & Young	£3,135
Ashby & Horner	3,360	Edwards & Medway	3,113
J. Carmichael	3,296	Lole & Lightfoot	3,078
Holloway Bros.	3,194	W. H. Lascelles & Co.	3,062

LONDON.—For erecting two villas in Rydal-road, Streatham. Messrs. Hames & Darling, architects :—

Lole & Lightfoot	£2,369	Lorden & Sons	£2,139
Patman & Fotheringham	2,300	King & Sons	2 116
Tyreman	2,222	Sanders	2,100
J. & C. Bowyer	2,200	Page	2,035
Whitehead & Co.	2,155	Ham & Son	1,990

LONDON.—For works of drainage at the "Prince Arthur" public-house, Greenwich, S.E., for Combe & Co., Limited. Messrs. R. M. Chart & Son, architects, Croydon :—

Rice & Son	£222	Batley, Son, & Hollness, Old Kent-road*	£135
A. Finn	215		

* Accepted.

LONDON.—Accepted for the erection of two new stone staircases, and other alterations to suit the requirements of the London County Council, at 138 and 140, Commercial-street, E., for the Birmingham Vinegar Brewery Company, Limited. Mr. Frank Fox and Mr. W. G. R. Bousfield, joint architects, 90, Gresham-street, E.C. Quantities supplied by Messrs. Dunk & Bousfield, Billiter-square-buildings, E.C. :—
Elkington & Co. £1,770

LONDON.—For works for the Hornsey District Council. Mr. E. J. Lovegrove, engineer and surveyor :—

Painting Administrative Block at Isolation Hospital, Muswell Hill.

T. Knapp	£174 4 0	Thos. Willson	£99 15 0
H. E. Silk	149 18 0	C. H. Freeman	79 4 0
Marchant & Hirst	147 0 0	Collier & Mackenzie	76 15 0
J. F. Penn	127 13 6	W. Dudley, New Southgate*	76 15 0
W. J. Canning	118 17 10		
F. De Jong & Co.	108 11 4		

* Accepted.

Painting Public Lamps and Street Name Plates.

Smith & Hindmarsh	W. Dudley
Barber & Olliver	J. F. Penn
J. E. Bence	Pontifex & Co., Coleman-street, E.C.*
Slade, Houghton & Co.	

* Accepted: Lamp Column and Lantern, &c., 2s. each; Street Name Plates 9d. each.

About 350 yards lineal of Wrought Iron Fencing.

	3 ft. 6 in. high.	4 ft. high.
	s. d.	s. d.
Raybould & Co.	5 3	5 7
Bayliss, Jones, & Bayliss	6 1	6 6
Hayward & Sons, Wolverhampton*	5 3	5 7
Walker Bros.	6 5	9 10
Priest & Sons	5 3	5 6
Mallett & Co.	10 10	11 5
Smith & Co.	6 7	7 2
Goddard, Massey, & Warner	7 6	8 6
M. McVey	5 2	5 6

* Accepted.

LONDON.—Accepted for a new top story, and additional staircases and alterations at 138 and 140, Commercial-street, for the Birmingham Vinegar Brewery Company, Limited. Mr. Frank Fox, and Mr. W. G. R. Bousfield, joint architects, 90, Gresham-street. Quantities supplied by Messrs. Dunk & Bousfield, Billiter-square-buildings, E.C. :—
Elkington & Co. £2,975

LONDON.—For alterations and decorations at the "Great Eastern." Ashwell-road, Old Ford, for Mr. A. Gower :—
A. Heard & Co. £550
[No competition.]

LONDON.—For decorations, &c., at the "Coach and Horses" Mile End-road, for Mr. Spensley :—
A. Heard & Co. £350
[No competition.]

LONDON.—For new warehouse, Duckett-street, Stepney. Mr. C. A. Legg, architect :—

W. G. Brown	£450	A. Heard & Co.	£399
Coulsell Bros.	440	Lemon	350

LONDON.—For taking down and rebuilding No. 83, Great Titchfield-street, W. Mr. W. Hargreaves Raffles, architect, 9, Argyll-street, Regent-street, W. Quantities by Mr. C. E. Bridwell :—

J. Simpson & Son	£4,149	Patman & Fotheringham	£3,820
W. Scrivener & Co.	3,859	James Carmichael*	3,605
H. C. Clifton	3,843		

* Accepted with modifications.

LONDON.—For additions and alterations at Nos. 40, 42, and 44, Boundary-lane, Walworth, for Messrs. Cloag & Co. Messrs. Lawson Bros., architects :—

Colls & Sons	£1,033	Eames, 135, Hill-street, Peckham*	£658
Bottley, Sons, & Co.	813		
W. J. Newstead	790		

* Accepted.

MACCLESFIELD.—For alterations to school buildings, for the Corporation. Mr. James Stevens, architect, Brook Bank, Macclesfield :—

Royiance & Co., Ltd	£3,620	A. Frith, Macclesfield*	£2,876
Hulse	3,292	J. Matthews	2,537
Cotterill	3,233		

* Accepted.

MIDDLETON (Lancs.).—For the erection of a branch store and three dwelling-houses, &c., Mills Hill, for Middleton & Tonge Co-operative Society. Mr. F. W. Dixon, architect, Trevelyan-buildings, Manchester :—

William Pollett	£1,444 10	Jonathan Partington*	£1,385 0
E. Partington & Sons	1,440 0	F. Jackson & Sons	1,374 10
Grundy & Co.	1,420 0		

* Accepted.
[All of Middleton.]

MIDDLETON (Lancs.).—Accepted, as per schedule of prices, for the execution of sewerage works (Contract No. 9), for the Corporation. Mr. H. L. Hinnell, C.E., 41, Corporation-street, Manchester :—
Etheridge & Clark, Manchester.

MITCHAM.—For alterations at the "Beehive Inn," Mitcham, for Page & Overton, Limited. Messrs. R. M. Chart & Son, architects, Croydon :—

A. Bullock	£144	J. Burges, Wimbledon*	£138

* Accepted.

MITCHAM.—For erection of a chimney shaft at Western-road, Mitcham, for Messrs. Blume. Messrs. R. M. Chart & Son, architects, Croydon :—

J. Burges	£220	E. J. Burnand, Wallington*	£195

* Accepted.

MITCHAM.—For alterations at the "Windmill" beer-house, Mitcham, for Nalder & Collyer, Ltd. Messrs. R. M. Chart & Son, architects, Croydon :—

Goulder	£163	Burges, Wimbledon*	£133
Haydon	150		

* Accepted.

PORTLAND.—For the execution of water supply works, Upwey, for the District Council. Mr. E. J. Elford, C.E., Council's Offices, New-road, Portland. Quantities by Mr. J. H. Blizard, Castle-lane, Southampton :—

Cooke & Co.	£30,924 12 0	Bostel, Sons, & Peattie, 73, Ebury-street, London*	£28,570 18 0
W. Jones	28,710 0 0		

* Accepted.

QUAINTON (Bucks).—For the erection of new schools and offices, for the managers. Quantities supplied. Messrs. W. F. Taylor & Son, architects, Aylesbury and Thame :—

Webster & Cannon	£1,758 0	J. Holland	£1,722 10
King & Cannon, Quainton*	1,747 0	C. Crook	1,669 0

* Accepted.

REIGATE.—For the erection of house in Manor-road, Reigate, for Mr. G. Taylor. Mr. C. E. Salmon, architect, Bell-street, Reigate :—

W. Hagraley & Sons	£1,724	A. B. Apted	£1,560
R. Killick	1,687	J. J. Carrick	1,470
W. J. Wells	1,654	C. Nightingale & Sons*	1,335

* Accepted.

ST. MARY CRAY.—For repairs at the "Blue Anchor" public house, St. Mary Cray, Kent, for Nalder & Collyer, Limited. Messrs. R. M. Chart & Son, architects, Croydon :—

Homerford & Son	£155	R. Lowe, Chislehurst*	£138

* Accepted.

SUTTON (Surrey).—For the erection of five shops at High-street, Sutton, Surrey. Messrs. R. M. Chart & Son, architects, Croydon :—

G. Jackson	£4 653	E. J. Burnand	£4,272
Hanscomb & Smith	4,476	H. Bacon	3,595
D. Barker	4,451	W. Ledbury, Banstead*	3,250
D. Stewart & Sons	4 375		

* Accepted.

SPILSBY.—Accepted for the supply of 8,000 tons of broken granite, for the Rural District Council. Mr. F. J. Dixon, C.E., Spilsby:—

	Average price per ton.	
Granite.	s. d.	Tons.
Matthew Jackson, Louth	£11 3	for 3,607
The Groby Granite Co., Groby, Leicester	11 1	„ 2,180
The Mountsorrel Granite Co., Mountsorrel	11 6	„ 2,569
Slag.		
The Islip Iron Co., near Thrapston	8 1	for 1,553
The Holwell Iron Co., Asfordby	6 0	„ 5,904

SWANSEA.—For the construction of sewer, Bath-road, Morriston, for the Urban Sanitary Authority. Mr. R. H. Wyrill, engineer, Guildhall, Swansea:—

Griff. Davies	£528 5 2	W. W. Lane, 1, Bay View-crescent*	£210 16 0
Weaver Bros.	281 5 2		
Charles Hanney	267 2 9		

* Accepted.

TAUNTON.—For the erection of a new dwelling-house and offices, near Taunton. Messrs. Samson & Cottam, architects:—

Cowlin & Son	£5,437 0	H. J. Spiller	£4,432 0
A. J. Spiller	4,475 0	W. Stockham	4,426 0
W. Potter	4,461 10	G. H. Pollard*	4,339 0

* Accepted.

THORNBURY (Glos).—Accepted for the erection of school buildings, for the School Board. Mr. Samuel Fudge, architect, Thornbury, Glos.:—

Tucker Bros., Thornbury £2,603 7

WOODBRIDGE (Suffolk).—For additions to Grammar School, for the Governors of the Seckford Hospital and Woodbridge Endowed Schools. Mr. Fred. Chancellor, architect, Chelmsford:—

Edward Adams £389
George Barrell, Woodbridge* 379

* Accepted subject to the sanction of the Charity Commissioners.

YORK.—For alterations and additions to the Ebor Brewery, York, for Messrs. John J. Hunt, Limited. Messrs. Inskipp & Mackenzie, architects, 5, Bedford-row, London, W.C. Quantities by Messrs. R. L. Curtis & Sons:—

Biscombe & Son	£4,658	Parker & Sharp	£4,058
H. Arnold & Son	4,500	Barry & Son, York*	3,987

* Accepted.

Rebuilding the "Freemason's Arms" public-house, Kensington.—In the list of tenders for this work published in our last issue, "Lowell & Lightfoot" should read "Lole & Lightfoot." The mistake was not ours.

LONDON SCHOOL BOARD TENDERS.

THE following lists of tenders were submitted by the Works Department at the last meeting of the London School Board:—

GLOUCESTER-GROVE EAST.—Shifting partition in Girls' department:—

F. T. Chinchen	£65 0	W. Hammond	£38 0
W. Brown	48 10	C. Gurling*	36 0

GRAFTON-ROAD.—Underpinning two external walls of south-east wing of main building:—

G. Kirby	£175	McCormick & Sons	£137
F. Britton	125	Stevens Bros.*	115
G. S. S. Williams & Son	141		

LILLIE-ROAD.—Providing stepped flooring in six class-rooms:—

Bugler & Co.	£169 10	W. Hammond	£93 10
W. R. & A. Hide	115 5	F. G. Minter*	86 0
Lathey Bros.	98 15		

MIDDLE-ROW.—Removing two iron buildings, &c., from the "Milwall" site, and re-erecting them on this site:—

T. J. Hawkins & Co.	£870	T. Cruwys	£698
Croggon & Co.	830	W. Harbrow*	698
Humphreys, Limited	830		

NORTHEY-STREET.—Heating:—

W. G. Cannon & Sons	£79 15	Berry, Campball & Co.	£65 10
Purcell & Nobbs	69 0	J. Grundy	63 5
G. Davis	68 10	J. F. Clarke & Sons	63 0

ROSENDALE-ROAD.—New school—Boys and girls, 476; infants (temporary), 276; total, 752; with schoolkeeper's house:—

		Extra for building brickwork in cement.
J. Carmichael	£16,938	£230
W. M. Dabbs	16,778	232
W. Smith	16,615	205
F. & H. F. Higgs	16,488	200
Holloway Bros.	16 212	213
E. Lawrance & Sons	16,053	213
G. E. Wallis & Sons	15,982	194
Stimpson & Co.	15,616	233
Treasure & Son*	15,395	194

ROTHERFIELD-STREET.—Executing structural alterations, repairs and painting, in order to adapt an old house on the site for a schoolkeeper's residence:—

W. Silk & Son	£750	Stimpson & Co.	£444
W. Martin	479	McCormick & Sons	434
F. Britton	475	Stevens Bros.*	398

ST. JOHN'S, HALLEY-STREET.—Replacing wood trimmers to three fireplaces with iron joists:—

Johnson & Co.	£115	G. Barker	£85
A. W. Derby	55	E. Jackson & Son	85
J. Kybett	90	D. Gibb & Co.*	45

* Accepted.

WEST LAMBETH (Group 2).—Repairs on schedule on a running contract:—

E. Triggs	+15 per cent. on the schedule prices.		
Peacock Bros.	+12½	„	„
Maxwell, Bros., Ltd.	+10	„	„
J. Garrett & Son	+ 7½	„	„
Rice & Son*	+ 7	„	„

* Recommended for acceptance.

TO CORRESPONDENTS.

W. D.—A.H.—E.M.L. (Below our limit). G. L.—A.S.—J. E. S.—J. & M. (Amounts should have been stated). W. L. R. (We cannot publish letters not authenticated by name and address).—"Disgusted Competitor." (We must decline to print your letter).—W. G. R. S.—A. R. H. (Too late; next week).

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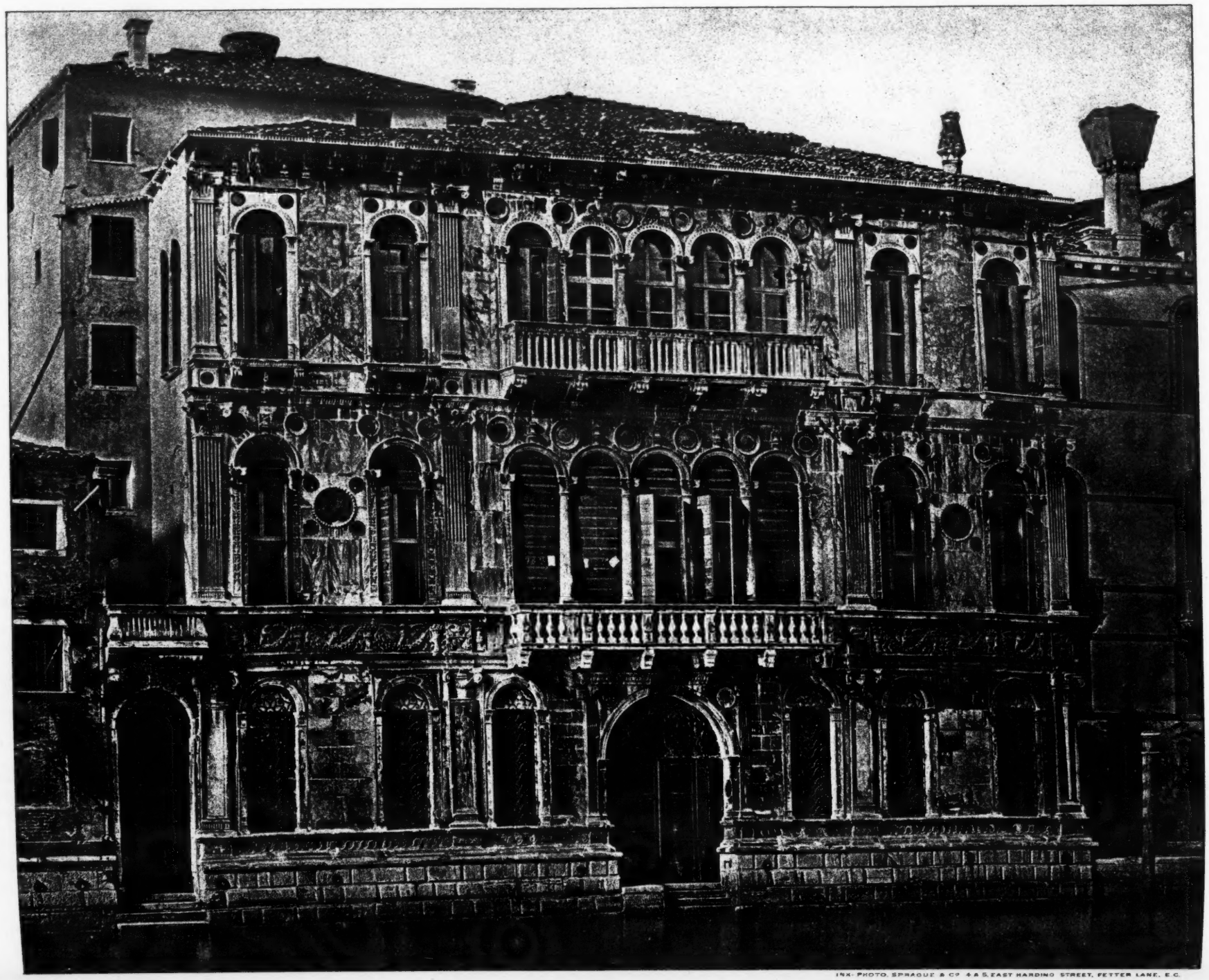

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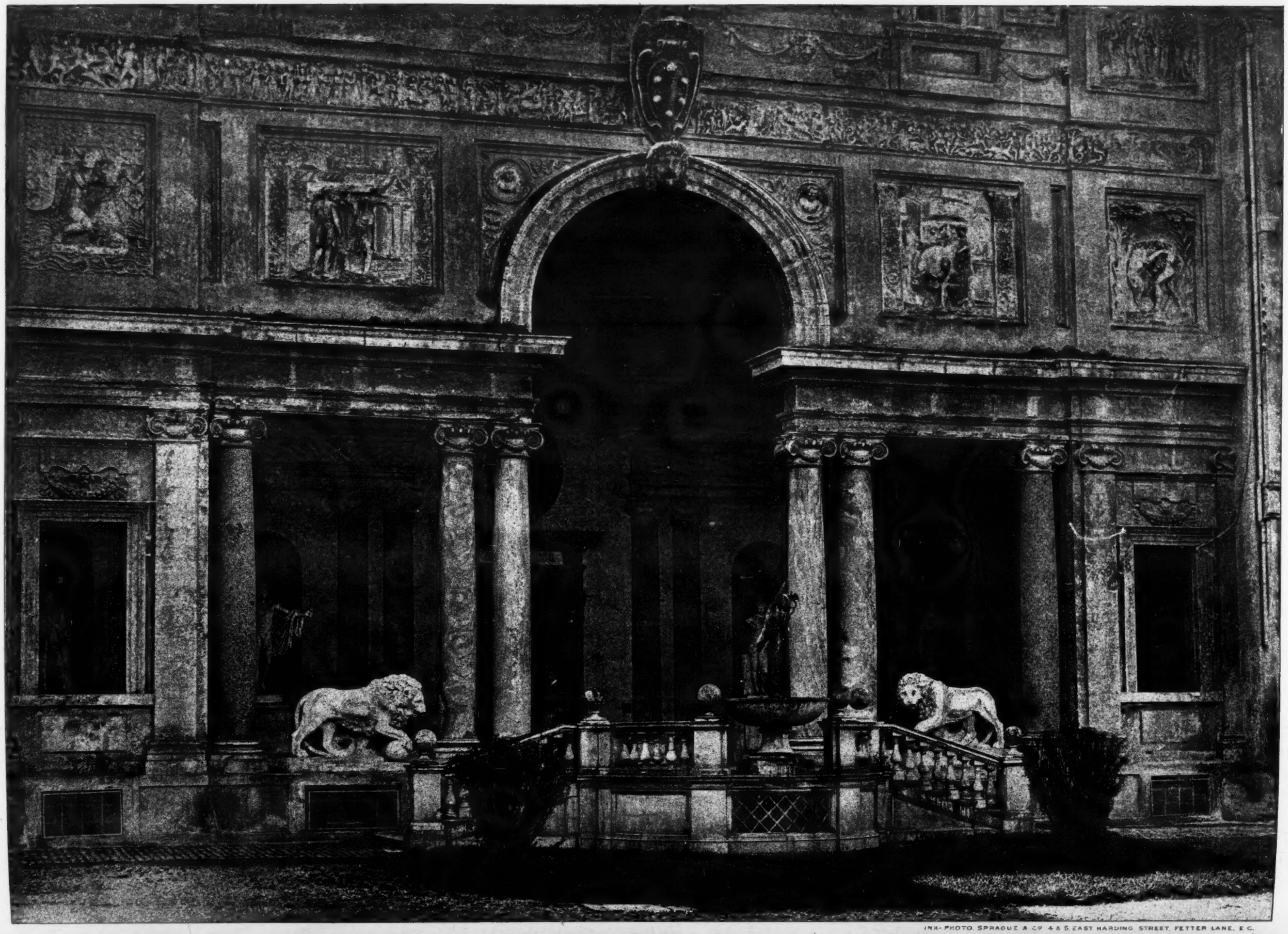

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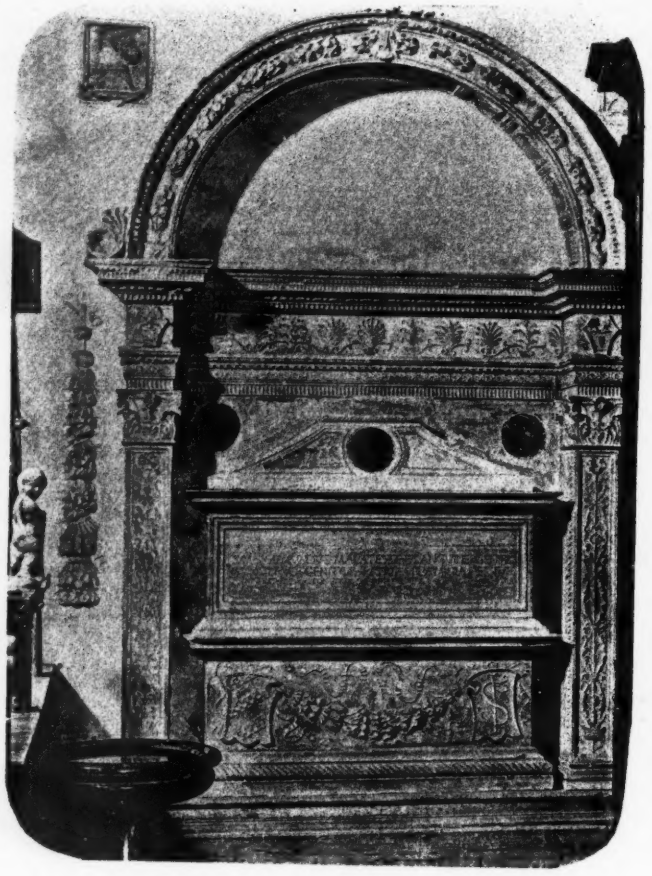

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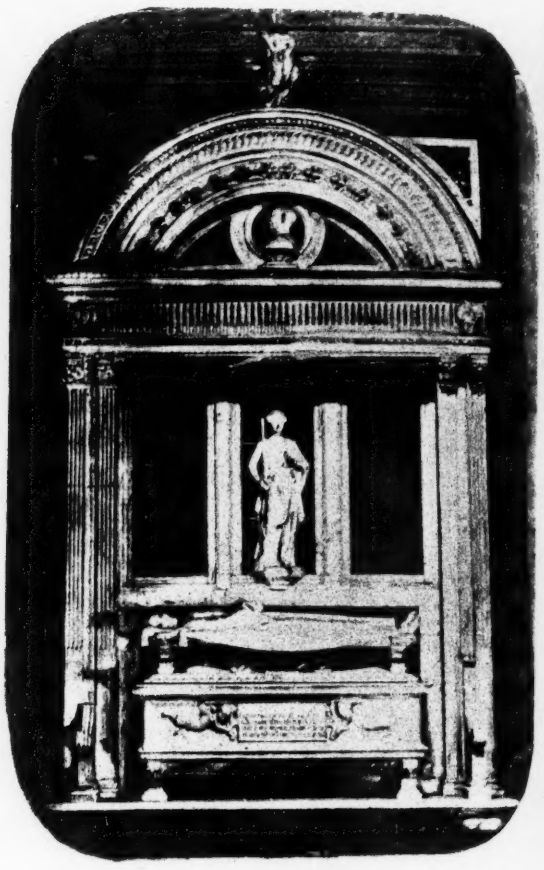

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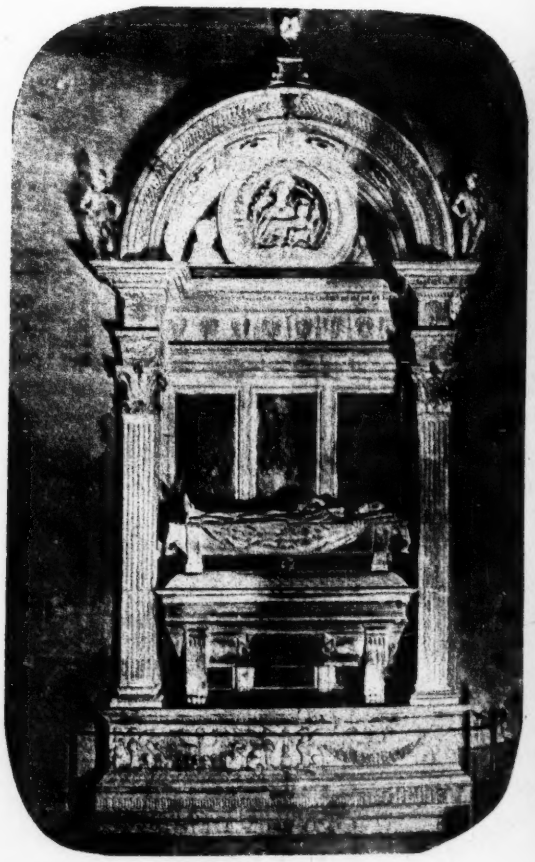

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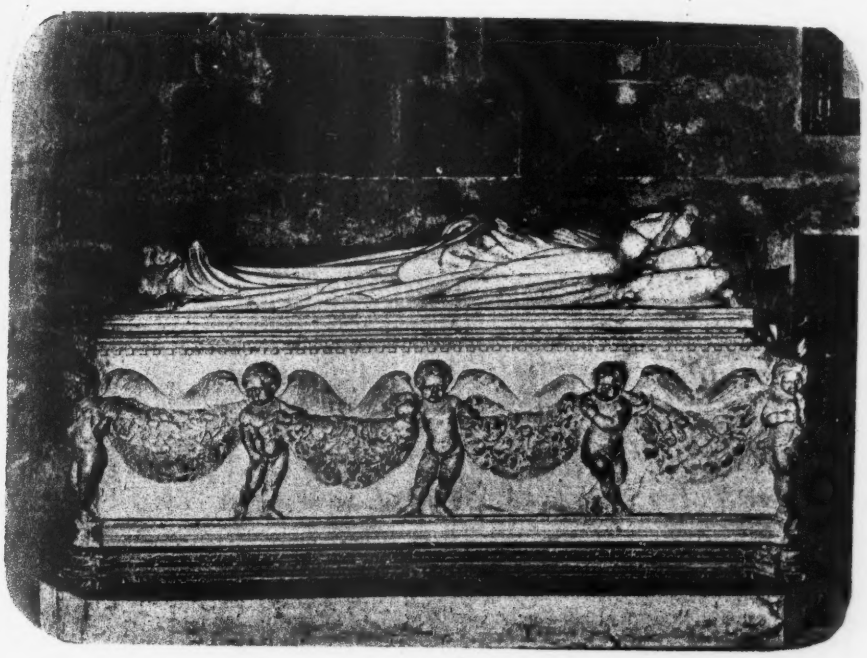

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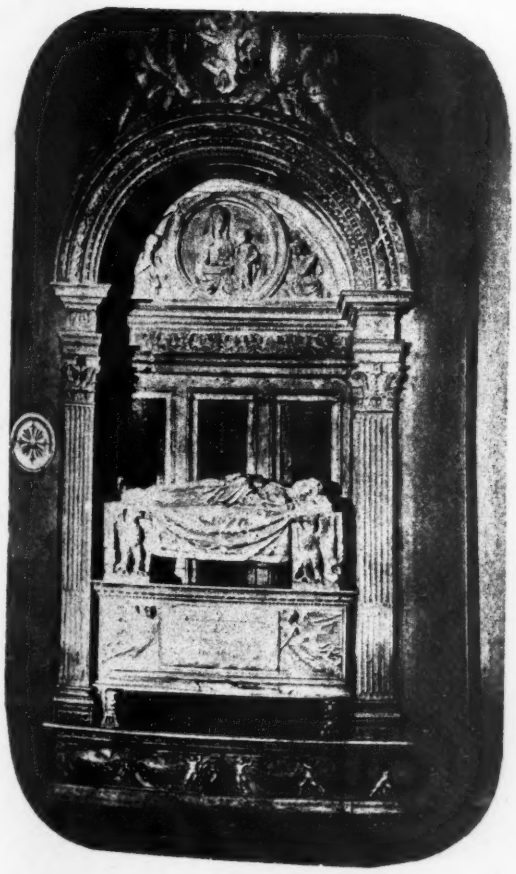

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